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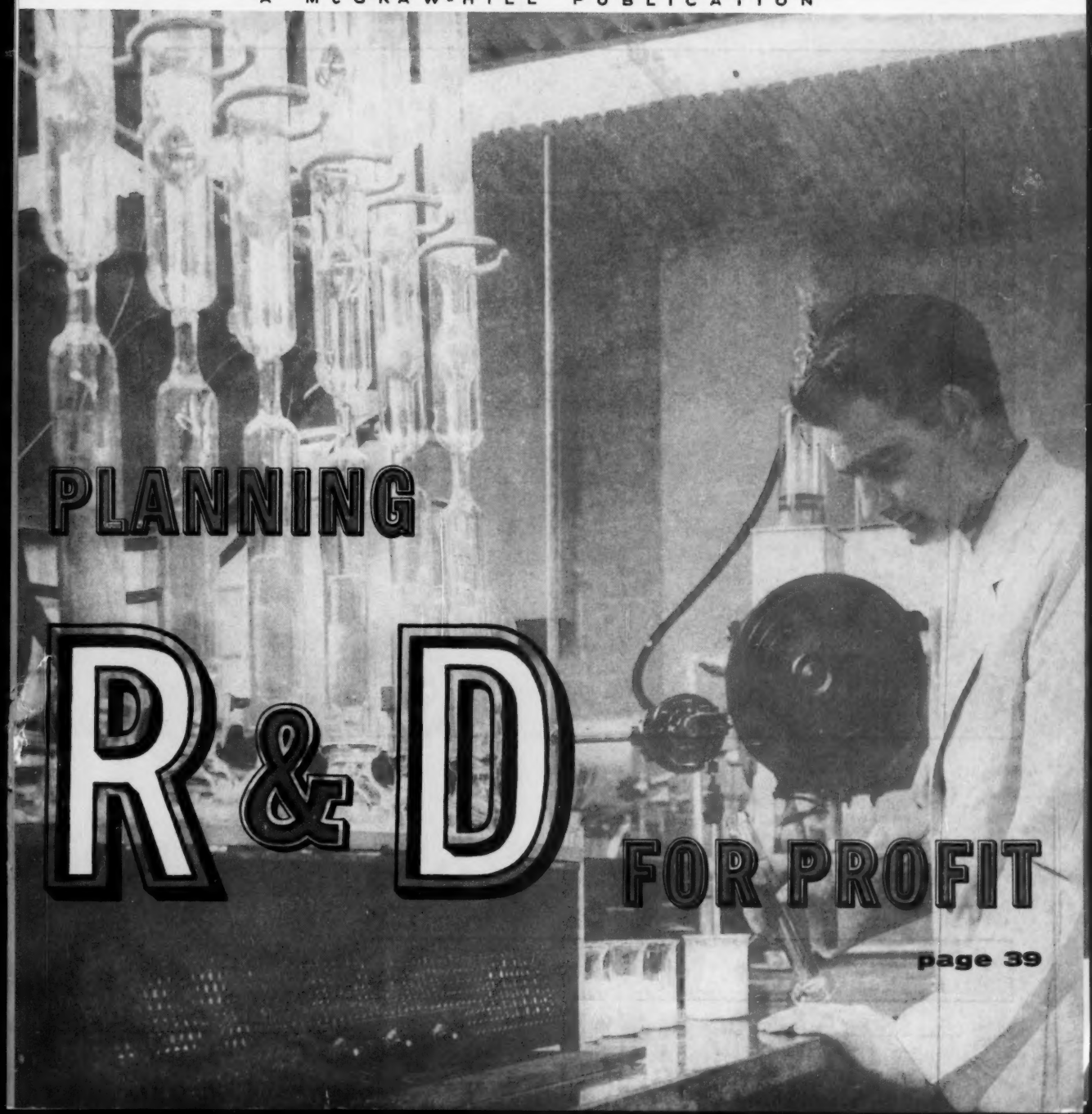
NOVEMBER 1959 $1.00

FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION



PLANNING R&D FOR PROFIT

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THIS FAMOUS LINE OF FIBRE CONTAINERS
ADDS A NEW WINNER...

Once again, it's Canco that introduces the *ideal* in a fibre container. This time—one that improves and perfects the packaging of refrigerated biscuit dough.

This new "String-Pull" container provides easier, no-damage opening. The string is pulled spirally the length of the container. A simple twist or a light tap on the edge of a table opens the package.

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NEW YORK • CHICAGO
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FOOD

NOVEMBER 1959

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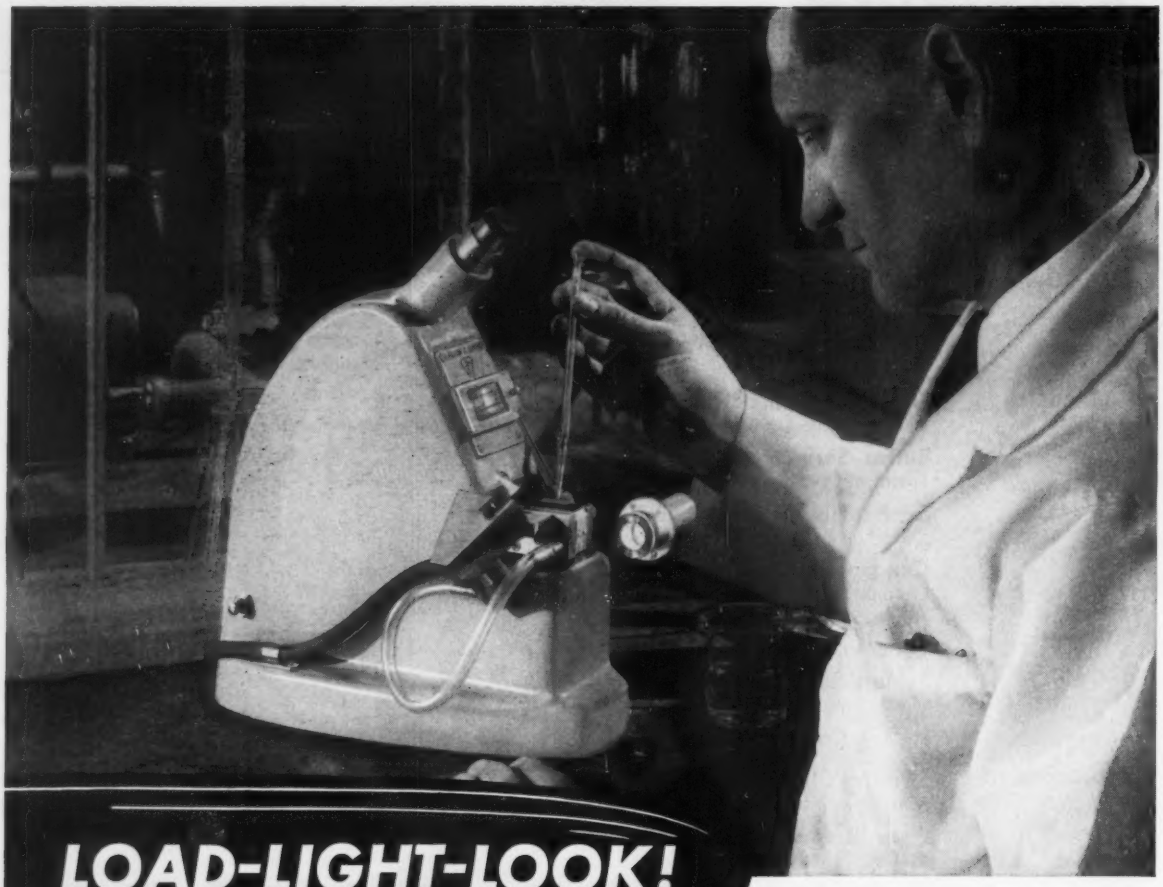

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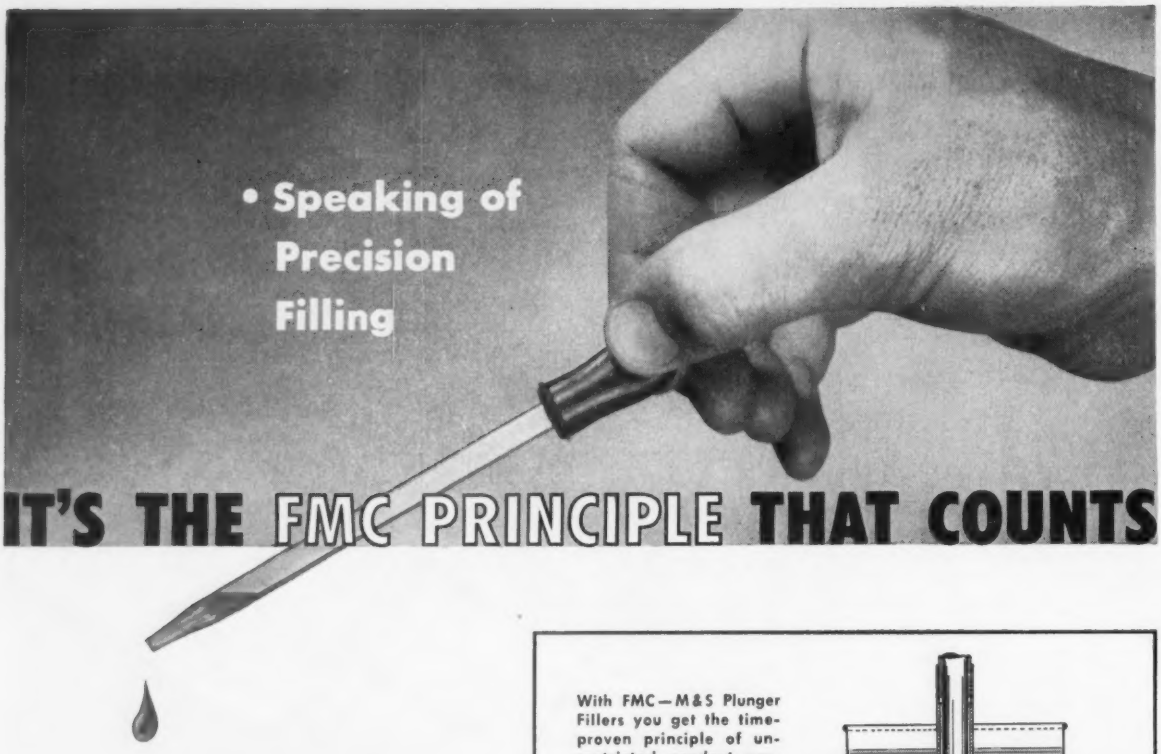

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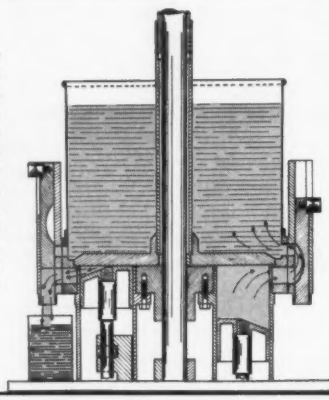

M&S 12 Pocket Filler at Bercut-Richard's Sacramento, California plant, filling paste in No. 10 cans at 72 cpm.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

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TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

Making up steel strike losses will bring surging business activity up to, and perhaps well beyond, middle of next year. But boom will not be solid, and may lead to recession in '61, says McGraw-Hill Dept. of Economics.

Retail food store sales were up 4% over '58 to $12.9 billion for second quarter of '59. Tonnage was 5% higher, GMA reports.

Average profit margin of food manufacturers has risen slightly to 2.9c. on sales dollar, according to GMA. Combined profit of manufacturers and distributors averages about 3.5c.

Hourly pay in food industry averaged $2.10 for second quarter, up 9c. over '58.

Wage adjustments made by food and beverage companies at midyear involve increases of $4 to $5 a week, according to Dept. of Labor.

Sales of grocery stores increased 8.3% per year on average since '50.

Sales increased 157% in 6 yr. for selected group of convenience foods, compared to 14% for relatively unchanged products, Nielsen reports.

World agricultural production rose 4% last year, after slight drop in previous season, FAO reports. World population gains 1.6% yearly.

Production of fall vegetables will be 12% lower than in '58, Crop Reporting Board predicts. Production of tomatoes, cauliflower, snap beans, and sweet corn will be only slightly smaller.

Pack of frozen green peas is up 21% to 304.6 million lb., second only to 359.7 million lb. in '56, NAFFP reports. Carryover was much lower.

Frozen RSP cherry pack is up 21.4% to 104.7 million lb., but sharp decline of 64% occurred in retail pack.

Volume of potatoes processed increased 275% between '50 and '58 to more than 300 million lb. Potato chips account for 71%; dehydrated, 12%; frozen, 10%; flour, 5%; canned, 2% ('57 data).

Sales of confectionery and chocolate products were up 8% for first 7 months of '59 to $612 million. Biggest gains were 13% each for 50-99c. packaged goods and for 5 and 10c. specialties. Bar goods dropped slightly.

Brown 'n serve comprises 35% of yeast rolls sold, General Mills reports.

One-third of coffee consumed in U. S. is instant type—50% in Canada.

Daily per capita coffee consumption will be 3 cups in '60, compared to 2.38 cups 10 yr. earlier, Pan-American Coffee Bureau forecasts.

See Developments to Watch p. 13

Packs of California canned fruit items are substantially higher this year. Canned cling peaches are up 22%; fruit cocktail, 11.6%; fruits for salad, 40%; mixed fruits, 52%; spiced peaches, 88%; freestones, 14%.

General Mills estimate pizza products market at $200 to $300 million. Other estimates go as high as $500 million.

Doubling of soybean production to 1 billion bu. annually within decade is predicted by U. of Illinois agriculturist. Soybean is becoming key ingredient in foods and feeds.

STEPHENS-ADAMSON

BELT CONVEYOR system saves leading food processor up to $90,000 in year's operation!

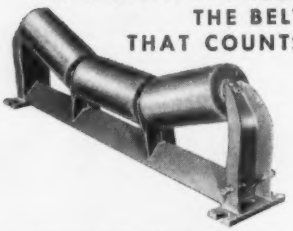
STEPHENS-ADAMSON engineers have a long-standing reputation for firsts — both for size and scope of engineered systems and for product features.

Typical of these firsts, is the World's Longest Grain Belt Conveyor, engineered for the A. E. Staley Mfg. Co., Decatur, Illinois, a half-mile belt conveyor system which has saved its owner nearly $90,000.00 in its first year of operation.

The conveyor system moves up to 224 tons of corn hourly — 192,000 bushels a day — from below the 12 million bushel capacity terminal elevator to the top of the processing plant holding elevator a half mile away.

Beside speeding corn handling to an equivalent of 100 grain cars per day, the installation provides a transfer system with better control, assures cleanliness of the corn, and eliminates spillage. Reduced handling costs per ton has resulted in considerable savings in over-all operating expenses.

IT'S WHAT'S UNDER THE BELT THAT COUNTS



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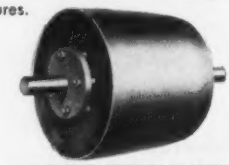
S-A manufactures a complete line of anti-friction carriers each providing a combination of exclusive engineering features.



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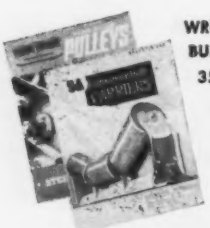
Maximum belt training effect and minimum belt stress and wear are provided with patented S-A CURVE CROWN design.



WRITE FOR BULLETINS 355 and 558

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Schedule of Events

November

16-18—Packaging Institute, annual forum; Statler-Hilton Hotel, N.Y.C.
16-19—American Bottlers of Carbonated Beverages, exposition; Kiel Auditorium, St. Louis.
17-20—Packaging Machinery Mfrs. Inst., exposition; Coliseum, N.Y.C.
30-D4—Chemical Industries, exposition; Coliseum, N.Y.C.

December

7- 9—Chemical Specialties Mfrs. Assn., annual meeting; Mayflower Hotel, Washington, D.C.
12-16—National Food Brokers Assn., convention; Palmer House, Chicago.
26-J3—Dairy & Food Exposition; Coliseum, N.Y.C.

HORS D'OEUVRES

▶ Square beer bottles have been introduced in Germany. And neck of one bottle will "nest" into concave bottom of another. So you can build a glass brick wall with the empties—if you can stand up.

▶ Could build a Chinese wall with the beer cans used in the U.S.—8.9 billion this year and 84 billion since the container was launched on a sea of wisecracks in 1935.

▶ King of ball-game tidbits is still the peanut—first in 14 of 16 major league parks. With which statistic National Peanut Council says nuts to potato chips.

▶ Two products account for three-fourths of the food manufactured in India—sugar and shortening. But life there is neither sweet nor fat.

▶ One acre of water "sown" with Chlorella could produce 40 tons of dried high-protein food a year. But Malthus can be patient.

▶ Not content with messing up Cuba's sugar industry, Fidel Castro's government has taken over the marketing of poultry feeds and eggs and now is walking on thin shells.

▶ No less than 11 billion hot dogs will be eaten in the U.S. this year—63 per capita. And Mr. K. promises us the Moon concession.

▶ A good food package should catch the eye at a distance and stir the appetite close up. That is, it should flirt then turn coy.

▶ Sunkist Growers say crops are harmed by air pollutants from automobile exhausts. Verily, the tin horse must be tamed.

▶ Michigan experimenters are feeding cows hominy to see if milk production will be increased. We feed canned foods to cats, why not to cows? They could chew up a nice new sales volume.

HAVING PACKAGE TROUBLE BECAUSE OF FATS GREASE OILS ?

GREASE-PROOF PATAPAR STOPS PENETRATION

NO GREASE "CRAWL"

THE TEST: Drops of oil placed on this Patapar remain on the surface indefinitely. The oil will not spread or "crawl." No seep through.

As a packaging material, or wherever a grease-proof barrier is required, new types of Patapar Vegetable Parchment provide positive resistance. With these grease-proof Patapars there is no penetration. Oil will not spread on Patapar's surface. There is no grease crawl—no "wetting".

Patapar is used alone for packaging, or laminated to other materials for end uses such as fiber drums, spiral tubes, cartons.

Patapar gives you WET-STRENGTH, too

High wet-strength is a basic quality of the many different types of Patapar. And, made from pure cellulose, Patapar is odorless, non-toxic. *It is furnished plain or colorfully printed.*

If you would like to test Patapar, write us telling your requirements. We'll send technical information and samples of the type we recommend for your purpose.

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SPECIAL PAPERS FOR SPECIAL PURPOSES

CIRCLE 9 ON READER SERVICE CARD

CIRCLE 11 ON READER SERVICE CARD→

Create More Demand for More Products by

Consumer interest in better nutrition has never been higher than it is today. As a result, products backed by strong nutritional claims are steadily gaining an increased share of every food dollar. You can take advantage of this nutritional boom and gain an edge over competition by fortifying with Merck vitamins and amino acids.

Merck offers nearly a dozen different nutrients, all easily adaptable to normal food processing operations. Consider Merck Ascorbic Acid, for example. It can give you promotable vitamin C claims for any number of products—from gelatin desserts and instant potatoes to fruit juice blends and instant drinks. Merck lysine can improve protein quality of cereals, specialty breads and other processed foods containing vegetable proteins. Vitamins B_{12} and B_6—both pioneered by Merck—are musts for all ages, are loaded with consumer appeal, give you unlimited opportunity for offering shoppers extra nutritional value in your products.

If you have new products in the works, or are looking for ways to stimulate sales of existing products—look first to Merck for the nutritional appeal, nutrients, and technical assistance you need.

For the full story call in your Merck representative now, or write directly to Rahway.

More Shoppers with MERCK NUTRIENTS

New booklet shows how you benefit from Merck's food processing laboratory. Send now for your free copy of "Merck Research for the Food Industry."

MERCK CHEMICAL DIVISION

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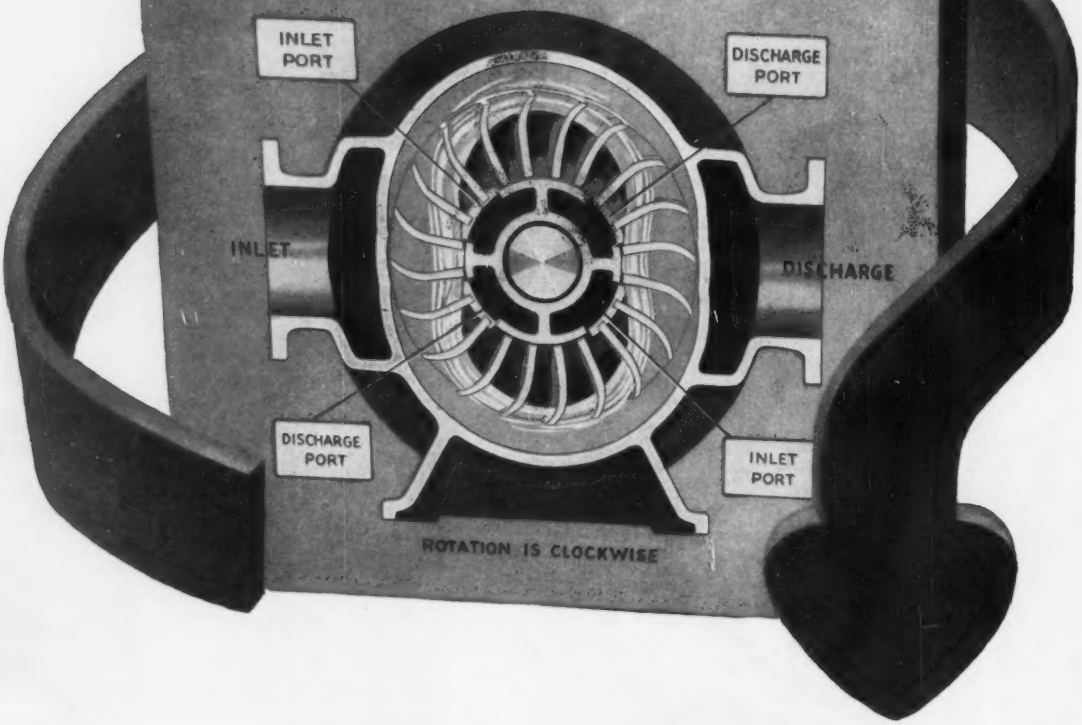
Nash Instrument Air Compressors deliver only clean air, free from oil or dust, and without filters



Here is Why!

You can dispense with oil filters and dust filters when you install ®Nash® Clean Air Compressors. You can save the cost of maintaining these devices. You can greatly reduce instrument maintenance costs. For the Nash employs no internal lubrication, therefore no troublesome oil is in the delivered air. Moreover, air from a Nash is thoroughly washed and cooled as it passes thru the pump. Dust in the plant atmosphere, even fly ash, is immediately removed.

®Nash® Clean Air Compressors are simple, with only one moving element. No valves, gears, pistons, sliding vanes, or other enemies of long life and constant performance complicate a Nash. No aftercoolers are needed. You will find it profitable to investigate these pumps, now.

No oil filters.
No dust filters.
No internal lubrication to contaminate air handled.
No internal wearing parts.
No valves, pistons, or vanes.
Non-pulsating pressure.
Original performance constant over a long pump life.
Low maintenance cost.

NASH ENGINEERING COMPANY
395 WILSON, SO. NORWALK, CONN.

DEVELOPMENTS TO WATCH

SPECIAL FOOD SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 21

General Mills will make Multi-Purpose Food, low-cost source of essential amino acids, vitamins, and minerals widely publicized as Dr. Borsook's 3c. meal. GM will market to institutions, schools, restaurants, and relief and civil defense agencies.

Standard sizes for lift-truck pallets are announced by American Standards Assn. Eight rectangular and three square pallets are included.

Interest in treating food with radiation may be stirred by new linear accelerator said to cut operating cost to ¼ and investment to ½.

Plate-type quick freezers are used to harden ice cream quickly by Oak Farms Dairies, Dallas. Quality is said to be improved, space saved.

Fish are suitable for low-sodium diets, says Bureau of Fisheries. Tuna, salmon, and halibut are lowest in sodium.

Orange beverage flavor emulsion homogenized by vibrating-reed ultrasonic unit at 22,000 cps. is more stable and can be held 25% longer.

Correlation between mortality from degenerative heart disease and amount of animal protein consumed is as good as that for fat intake and mortality. This doesn't make proteins hazardous.

Packaged whipped butter will be produced at high capacity on new automatic production line to be installed by New York firm. Equipment will whip, fluff with nitrogen, cool, mold, and package product.

Minute dehydrated sliced potatoes useful in all potato dishes is new product of GF's Jello Div. Ten servings are in 8-oz. package.

Malt is being replaced by mold, Aspergillus niger, in Russian process of converting starch to alcohol. More alcohol per ton of starch is claimed.

Swift hopes to develop essence of meat protein containing all essential amino acids, for addition to other foods. Packer also is introducing sliced turkey and frankfurter cocktail tidbits in boilable plastic pouches.

Borden is introducing easy-bake coffee ring in 9-oz. cylindrical container. Package contains dough, glaze, and icing.

USDA will design stand-by process for removing strontium-90 from milk. Technique will be available to dairies if needed in future.

Optional wine-grape inspection has been set up by California. Winery pays $57 a day for inspector, $38 for two helpers. Preparatory costs for 14 wineries is estimated at $84,000; salaries for 6-week crush, $34,000 for inspectors, $10,000 for assistants.

Japan pledges to supply only enough tuna to U. S. market to fill demand our industry cannot meet. Boon to West Coast fisheries.

New direct colorimetric nitrate determination method involving use of brucine has been developed by American Meat Institute Foundation. It is applicable to pickle solutions and dry curing mixtures, as well as meat.

Frozen foods cooled with liquid nitrogen to −45F. traveled 7 days in unrefrigerated trailers insulated with foam plastic, and warmed only 10 deg. Libby made shipments from California to Chicago via piggy-back RR car.

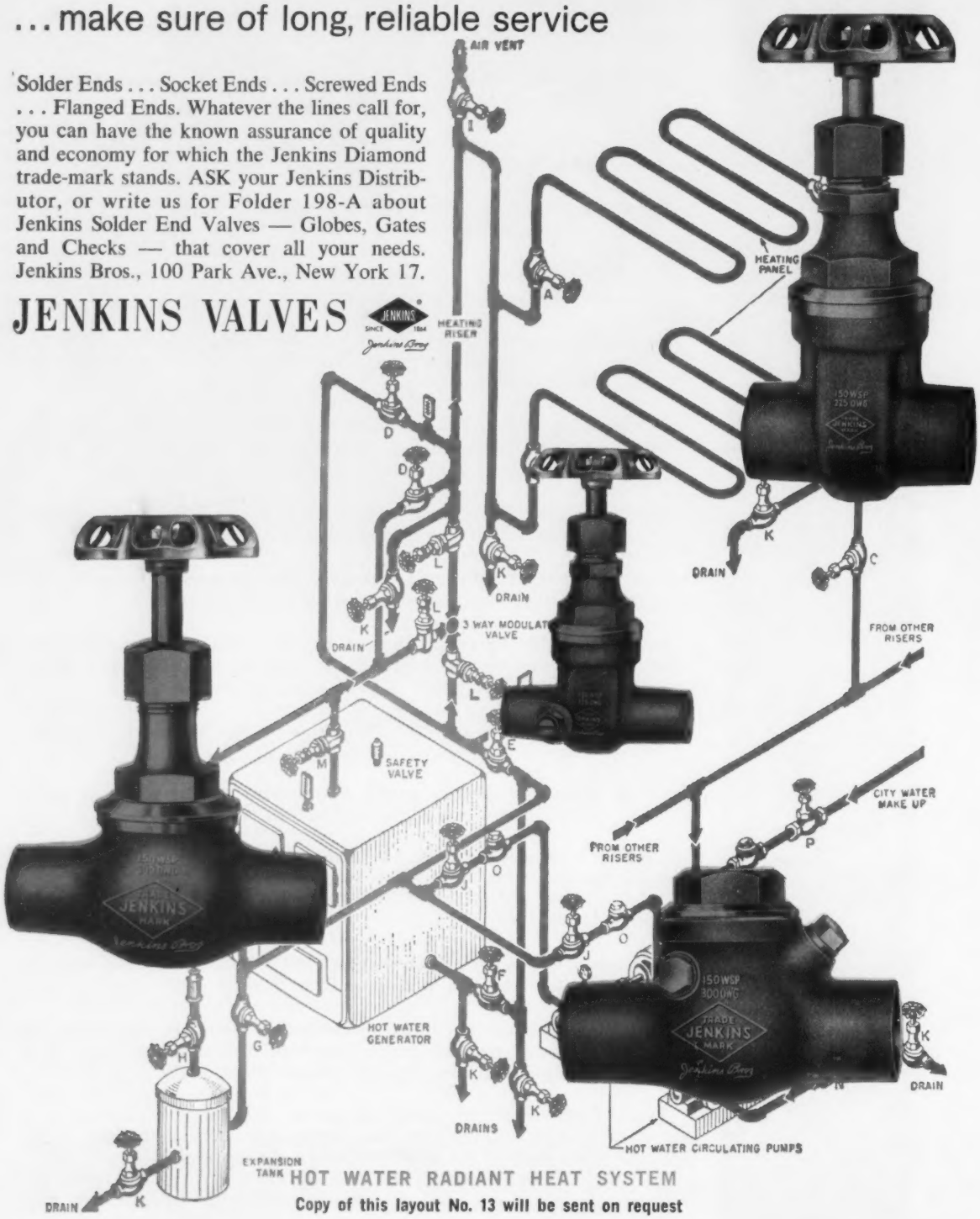
Look for this... JENKINS®

on **SOLDER END Valves,** too

...make sure of long, reliable service

Solder Ends . . . Socket Ends . . . Screwed Ends . . . Flanged Ends. Whatever the lines call for, you can have the known assurance of quality and economy for which the Jenkins Diamond trade-mark stands. ASK your Jenkins Distributor, or write us for Folder 198-A about Jenkins Solder End Valves — Globes, Gates and Checks — that cover all your needs. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS VALVES



Copy of this layout No. 13 will be sent on request

CIRCLE 15 ON READER SERVICE CARD→

Tobin Packing Co. uses 15 eye-catching Mack units like this Model B-60T for dependable, on-schedule deliveries of perishable meat products.

The ignition key won't be touched for the next 600 miles

When this Mack starts its run, the engine can't stop 'til the last customer has been served. Even when deliveries are being made, the engines must continue to operate to supply power for the refrigerator units.

Because failure of engines or components could mean the loss of a truck-load of valuable Arpeako First Prize meat products, Tobin Packing Co. of Rochester, New York, decided on dependable Mack tractors. Now their heavy-duty units total 600,000 miles a year on day-in, day-out express runs. Do it on-schedule, economically and without costly maintenance and downtime.

Cost sheets, maintenance men and drivers alike confirm that Macks' performance and economy make them stand out as the greatest truck buy today. Ask your Mack branch or distributor for the names of nearby Mack users who are cashing in on the earning superiority of their trucks. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
FIRST NAME FOR
TRUCKS

How *Sterwin* Puts More Profit Into Food Products!

If your food product requires enrichment, color, flavor...then STERWIN can help you save time, money, labor . . . so give you more profit.

For STERWIN offers unique extras in vitamins, colors, vanillin, and these superior ingredients are fitted into your production picture by experts with years of practical and technical experience. These STERWIN Technically Trained Representatives have cut time, expense, production steps for manufacturers producing a widely varied range of food products: candy, bread, margarine, soda, fruit juice, cereals . . . to name just a few.

STERWIN ingredients are delivered when you want them, in the quantity you need. Keeping delivery promises is a STERWIN tradition that helps keep your production at top efficiency.

For new production set-ups or to improve an existing one . . . see your local STERWIN Representative . . . costs you nothing . . . can profit you plenty.

You get these extras when you buy:

STERWIN VITAMINS . . . *the most complete line* in the field . . . immediate delivery in any quantity.

STERWIN COLORS . . . Parakeet Certified F.D.&C. . . . backed by a *highly experienced technical staff* to help you with your color problems.

STERWIN VANILLIN . . . pure, ZIMCO® U.S.P. Vanillin . . . *unlimited supply* of basic material from world's largest vanillin producer.

Sterwin Chemicals INC.

Subsidiary of Sterling Drug Inc.

1450 Broadway, New York 18, N. Y.

LAckawanna 4-6400

STOCKS AVAILABLE AT: Atlanta, Buffalo, Dallas, Denver, Evanston, Ill., Kansas City, Mo., Los Angeles, Menlo Park, Calif., Minneapolis, Portland, Ore., Rensselaer, N. Y., St. Louis

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $52,352,297 for expansion.

Proposed Work

Adkins-Phelps, Inc., North Little Rock, Ark., grain elevator, $3,000,000.

Arden Farms Co., Moses Lake, Wash., milk processing and distributing plant, $140,000.

Butt Grocery Co., Corpus Christi, Tex., bakery, $300,000.

Cagles, Inc., Macon, Ga., poultry processing plant, $125,000.

Carling Brewing Corp., Halethorpe, Md., brewery, $16,000,000.

Carolina Fine Foods, Inc., Greenwich, Conn., warehouse, $120,000.

Coca-Cola Bottling Co., Sumter, S. C., bottling plant, $150,000.

Colonial Provision Co., Roxbury, Mass., meat plant addition, $150,000.

Cutler Dairy Products, Inc., Philadelphia, processing plant, $150,000.

Duncan Coffee Co., Houston, plant, $3,250,000.

G. W. Freda Sausage Co., Philadelphia, meat processing plant, $250,000.

General Foods Corp., Clifton, N. J., distribution center and sales office, $1,500,000.

Morton Foods Co., El Paso, Tex., plant, $250,000.

Nyce Supply Co., New Britain, Pa., grain elevator, $150,000.

Red Star Yeast & Products Co., Glendale, Wis., office and lab center, $1,000,000.

J. M. Smucker Co., Orrville, Ohio, preserves mfg. plant, $750,000.

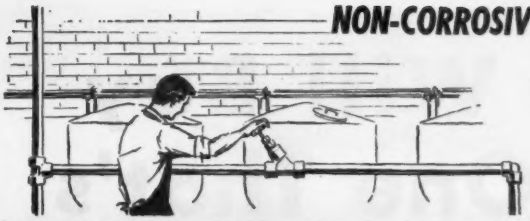
Swift & Co., Rochelle, Ill., meat packing plant, $5,000,000.

United Industries Co., Inc., Houston, grain elevator, $150,000.

Contracts Awarded

The Andersons, Maumee, Ohio, grain storage, $1,300,000; also Toledo, grain elevator, $850,000.

Anheuser-Busch Co., Chicago, warehouse and office, $850,000, also, Tampa, Fla., brewery addition, $3,000,000.



NON-CORROSIVE... NON-TOXIC

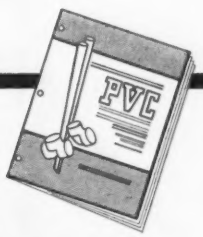
piping systems at low cost

MUELLER BRASS CO. PVC (POLYVINYL CHLORIDE)

RIGID PLASTIC PIPE AND FITTINGS

Mueller Brass Co. PVC rigid plastic pipe and fittings offer the food industry efficient, non-corrosive piping systems at substantial cost reductions. Solutions commonly used by the food industry, such as brine, acetic acid, alcohol, fats and oils will not corrode PVC pipe. The smooth inner wall of PVC prevents deposits from forming and allows a high rate of discharge at all times. The purity of liquids is positively protected. PVC is guaranteed non-toxic and will not impart foreign tastes or odors to the liquid it carries. Its light weight cuts installation time and expense and its permanent built-in finish reduces maintenance costs.

Low installation costs, reduced maintenance and the long, trouble-free life of Mueller Brass Co. PVC plastic pipe and fittings assure the food processor increased savings with each year of use.



NORMAL IMPACT PVC—good impact strength . . . maximum chemical resistance.

HIGH IMPACT PVC — maximum impact strength . . . high chemical resistance.

Pipe is fabricated in 20' lengths; ½" through 3" sizes—I.P.S. schedules 40 and 80. Fittings are available in ½" through 3" sizes; threaded and socket-type for schedule 80 and in socket-type only for schedule 40.

Write for the new Mueller Brass Co. Technical Brochure.

MUELLER BRASS CO.

PORT HURON 53, MICHIGAN

274-C

POLYETHYLENE PIPE AND PLASTIC FITTINGS, COPPER TUBE, VALVES AND FITTINGS

She Will Buy The One That's *INSTANT!*

INSTANTIZE YOUR PRODUCT WITH THE BLAW-KNOX INSTANTIZER

BLAW-KNOX COMPANY
Dairy Equipment Division
Mora, Minnesota

18 CIRCLE 18 ON READER SERVICE CARD

Bamby Bakery, Salisbury, N. C., bakery addition, $150,000.

Crider Poultry Co., Douglas, Ga., poultry processing plant, $130,000.

Food Center, Inc., Charletown, Mass., warehouse, $118,000.

Foremost Dairies, Inc., Miami, plant additions, $276,682; also Montgomery, Ala., processing plant, $433,000.

Frito Co., Los Angeles, plant addition, $650,000; also Venice, Calif., processing plant, $320,000.

Guilford Dairy Cooperative Assn., Greensboro, N. C., dairy plant addition, $126,697.

Gwaltney, Inc., Smithfield, Va., meat packing plant, $491,598.

Maier Brewing Co., Los Angeles, brewery addition, $472,000.

Philadelphia Food Distr. Center, Philadelphia, tomato processing plant and office, $150,000.

Pillsbury Co., Jasper, Ala., feed mill, $264,000.

Ralston-Purina Co., St. Louis, research lab, $400,000.

J. Reisman & Sons, Pennsauken, N. J., bakery, $500,000.

Jos. Schlitz Brewing Co., Milwaukee, bottlehouse, $5,000,000.

Sealtest Foods Div., New Haven, Conn., ice cream plant addition, $275,000.

Sinai Kosher Sausage Corp., Chicago, meat packing plant addition, $400,000.

United Industries Co., Inc., Houston, grain elevator, $263,000.

Zummo Meat Co., Beaumont, Tex., plant addition, $172,000.

Others

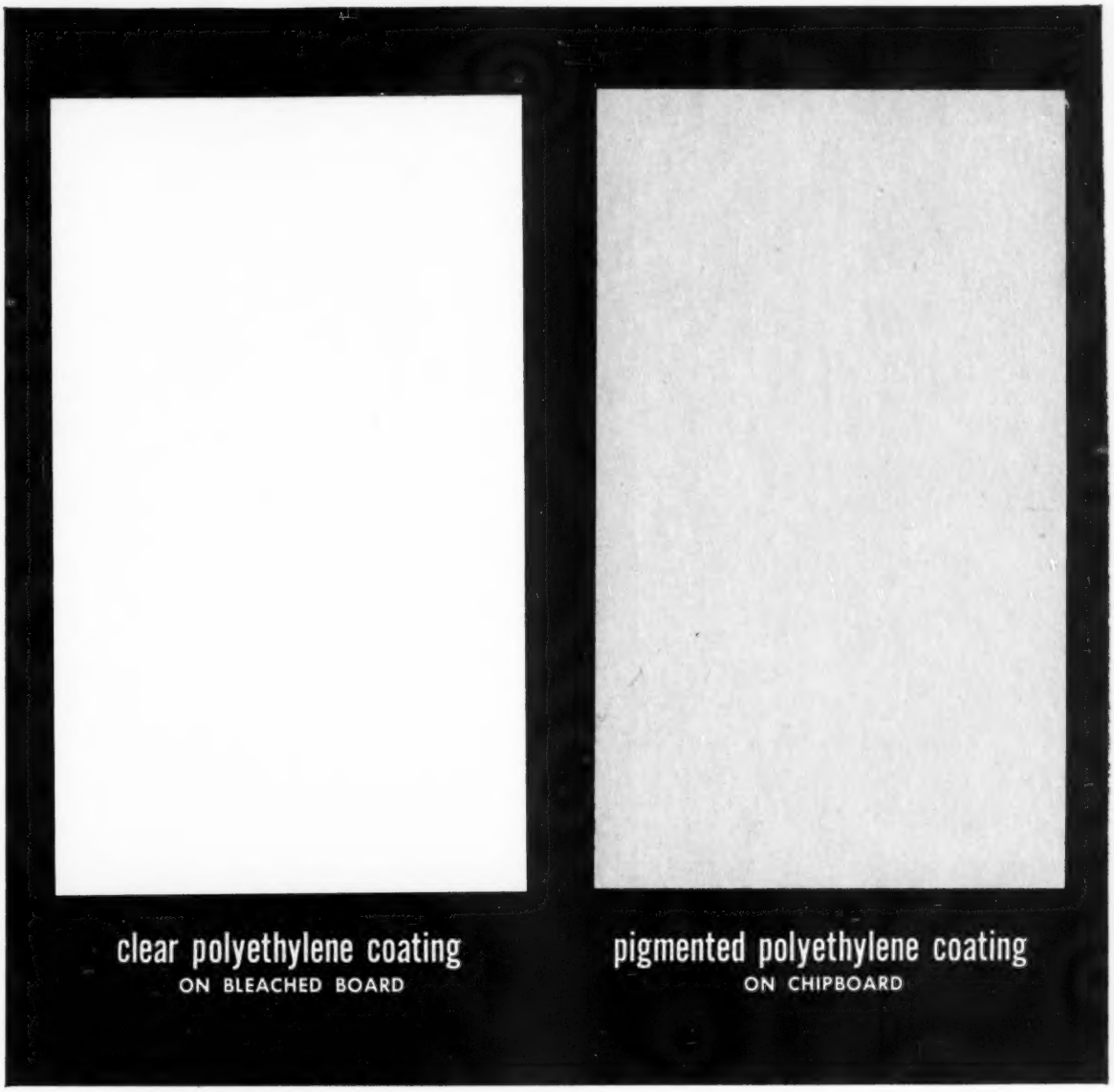
Best Maid Products, Inc., will build a $50,000 addition and add $25,000 of new equipment to its Fort Worth, Tex., plant.

Duncan Coffee Co. will spend over $3 million to build a new coffee-roasting plant in Houston.

General Foods Corp. announces plans to build a district sales and distribution center in Clifton, N. J.

Lawry's Foods, Inc., Los Angeles, has begun construction on a $250,000 warehouse.

Ralston-Purina Co will build a 50,000-ton feed mill at Monterrey, Mexico.



clear polyethylene coating
ON BLEACHED BOARD

pigmented polyethylene coating
ON CHIPBOARD

THE CHOICE IS UP TO YOU . . .

You know about polyethylene-coated board and the wonderful job it's doing in the food and industrial packaging fields. But do you know about *pigmented* polyethylene coatings and how they can upgrade lower-priced board, allowing you to choose from a wider range of board stock and to achieve even greater flexibility in your choice of packaging materials.

Investigate both kinds of polyethylene coatings; you'll find they're more versatile than ever before.

Clear or pigmented—extruded polyethylene coatings are tough, scuff resistant, unusually adherent. They have superior grease and moisture resistance. They will not scratch other surfaces. They heat seal readily, offer good printability.

Extruders and packagers who make or use polyethylene-coated board may obtain information and technical assistance by writing to U.S.I.

PACKAGERS OF FOOD PRODUCTS —

Specify U.S.I. PETROTHENE® polyethylene resins for your coated packaging materials. They offer the maximum in moisture-tight, grease-proof coatings for board, paper or other films. Your supplier will like their superior working properties, too.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

SHE'S GETTING FULL VALUE FROM POLYETHYLENE PACKAGING... HOW ABOUT YOU?

Polyethylene bags are tough . . . clear . . . inexpensive. They carry bulky produce through a lot of rough handling in the packing house, in the store, and on the way home. Polyethylene lets customers see what they're buying in addition to giving the many advantages of prepackaging. The result—increased sales.

But these advantages are not automatic—you have to plan for them in your bag specifications. To get the most value for your polyethylene packaging dollar—

Keep These 3 Points In Mind—

• HOW MUCH STRENGTH . . . HOW MUCH CLARITY? Strength and clarity are built into polyethylene film through the resin. Generally, the more you want of one the more you have to give up of the other.

• MORE BAGS FOR THE SAME MONEY IS NOT ALWAYS THE BEST VALUE. You are probably getting thinner bags. You can easily lose more in packaging line delays and package failures than you save in first cost. To get exactly what you want—

• DECIDE ON YOUR NEEDS, THEN SET YOUR OWN SPECIFICATIONS. The film converter working with the resin manufacturer can vary such factors as bag size and type, thickness, package design, film strength, clarity, and slip.

Specify on your order exactly what characteristics are most important for your own needs; your converter can give them to you.

More and more, packers and growers are setting specifications for their polyethylene bag purchases. U.S.I., makers of PETROTHENE® quality polyethylene resins, will be glad to assist you and your supplier in selecting the right materials for your packaging needs.

FREE—To help users select and specify the polyethylene film best suited for most common flexible-packaging applications, U.S.I. has prepared a 4-page data sheet, "Which Polyethylene Film Should I Use?", which lists specific film properties required for specific uses. Also available is U.S.I.'s 8-page booklet, "Formulas and Tables for Polyethylene Film and Bags", to be used for calculating bag and film thickness to be expected from given weights of polyethylene. For your copies, write to U.S.I. at the address below.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

Army Drops Food-Raying Program

The Army is terminating its big Lathrop, Calif., food-irradiation project, which the food industry was watching with great interest.

So many problems turned up with high-intensity irradiation—particularly destruction of vitamin content—that the Army feels it would be a waste of money to build the California pilot plant.

▶ **But its findings don't deny the promise of low-level 'pasteurizing' raying (FE May, p. 42) as a means of extending shelf-life of foods—industry's key interest.**

Army now expects to re-orient its research—keeping a "hand in" on irradiation but switching its emphasis to improve dehydration of cooked foods. Here, it appears more economical to work on such other methods, rather than irradiate and then restore vitamin content.

Specifically, animals fed rayed-food diets suffered various body ills due to attendant vitamin destruction. Only about 60 humans have been fed rayed foods (30% of their diet for alternate weeks). Here, no ill effects developed.

About $1.3 million had already been spent toward a projected $7.5 million. Irradiated Products, Inc., a company formed by Armour, General Foods, Continental Can, and Food Machinery & Chemical, also had spent $133,000 assisting the Army.

Covering Army's 4-yr. studies is a book, "Radiation Preservation of Food." You can get it from Dept. of Commerce Office of Technical Services ($5).

Fighters' Freezer-Oven Combination

Attracting much attention in a recent Washington display was a new thermoelectric food freeze-and-heat unit aimed for military use—also space travel.

In multi-compartment cabinet form, the unit (Whirlpool Corp., Div. of Birtman Electric) holds pre-cooked meals in a frozen state until minutes before serving time. Thereupon, reversing of the electric current changes the individual compartment into an oven—which heats the food without affecting frozen meals in adjoining compartments.

These freezer-heaters work in a 20-to-200F. temperature range.

RR Freight-Rate Cuts Protested

ICC has moved to permit railroads to cut freight rates on canned goods routed from coast to coast.

This brings sharp protests from the steamship lines, which point out that intercoastal shipping is already plagued with a decline.

Particularly opposed is posting of a low $1.74-per-cwt. transcontinent RR rate on canned-goods lots scaling 75,000 lb. or more.

Here, small canners side with the water interests, feeling this big-volume rate gives undue advantage to their large competitors.

Consultants Advise FDA Build-Up

FDA needs further strengthening—more manpower and a step-up in functions—according to a study by McKinsey & Co. The Agency had expressly called in this consulting firm to yardstick its current operations.

Finding FDA's basic organization effective, the report advises new accent in staff and program-planning functions. Additional resident inspection posts, staffed as required, are particularly recommended.

FDA Commissioner Larrick already has announced a schedule for adding new inspection posts. He also cites adoption of automatic data processing to improve performance.

Meantime, increasing voluntary improvements by formerly lax food plants are cited as reflecting the influence of the newly vitalized program. In fiscal '59, manufacturers and warehousemen spent $4 million on 238 improvement projects.

Resins Will Free Milk of Sr-90

In case of pressing need, ion-exchange resins can be used to remove more than 90% of strontium 90 from milk, declares AEC.

It's said cost would range to a few cents a quart.

Practical dairy-plant routines for doing the job are now being jointly explored by AEC, USDA, and PHS.

BRIEFS

Claims that certain foods reduce blood cholesterol have blossomed to point where FDA and FTC are hawk-eyeing labels and ads for misrepresentations. Truth is that real health factors still remain very hazy.

Justice Dept. has sued Pabst—contending it should divest itself of Blatz, an acquisition it calls monopolistic. Pabst, which holds its move was entirely proper, had faltered after '56, but now again is posting black ink and reportedly is back in 5th place among the nation's breweries.

A boost in imports of Dutch and Italian cheese is being explored by the President. His question: What effect would this have on dairy price supports?

Word comes that thaw indicators will be 'musts' in precooked frozen-meal packs QM routes to the Air Force.

Pressure-can whipped toppings and lambs are in the regulatory news: Proposed for toppings are standards of at least 30% milk fat in "whipped cream" and 18% in "whipped table cream." . . . As for lambs, the initial plan to drop grading brought cries from small packers and housewives. New idea is a standards revision that would reduce average fat content permitted in Prime and Choice grades.

Government surpluses really can be cut! A close look showed only 33 million lb. of dairy products stashed by Uncle Sam this Sept. 30—down a whopping 85% from the 217 million lb. of a year earlier. Credited are farmers' successes is getting milk production more in tune with demand.

Support for a Cabinet-status Dept. of Consumers, as pushed by Sen. Kefauver, now comes from Alfred Julien, past president, National Assn. of Claimants' Compensating Attorneys. Citing a climb in injury cases with the flood of new products, he contends that such a Department is needed to supplement FDA's work.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

"Why we use Sterling Purified Salt in the pre-sterilized juice process"

Quality tomato juice is the specialty of the Francis C. Stokes Company in Vincentown, New Jersey. They pack Stokes and private-label brands for several large grocery chains and leading independents. Present plant was rebuilt in 1955 and has the latest canning equipment, maintained spotlessly clean and sanitary.

Sterling Purified Salt is dispensed through the Sterling Bulk Salt Dispenser on a line averaging 180 cans per minute. 150 grains are deposited in each #46 can. The accuracy of the salter and the free-flowing quality of the salt make this high-speed operation possible.

"The main reason is that it flows freely from our dispensers," writes Francis C. Stokes, Jr., V. P., Francis C. Stokes Company.

"Ever since we changed to Sterling Purified Salt, we've had far less trouble with the dispensers clogging. This salt flows better than any of the others we tried in the past—and that's quite remarkable considering the very humid conditions encountered in a juice-canning plant.

"Here's another point. In our process, the juice is sterilized before it reaches the canning machines. In our four years of using and testing Sterling Purified Salt, we've never come across a batch that didn't meet our sanitation requirements!"

Guaranteed more than 99.95% pure, Sterling Purified Salt never has more than 40 parts per million combined calcium and magnesium, never more than 0.5 parts per million copper or iron. That's why Sterling Purified Salt more than meets the low requirements for calcium, magnesium, copper and iron for the entire food-processing industry . . . and why it *always* protects the flavor, color and texture of canned foods.

3 high-speed dispensers for Sterling Purified Salt. You can dispense Sterling Purified Salt any way you want—in brine, tablets or bulk—with one of the three special dispensers available from International Salt Co. Whatever dispenser you choose, you're sure of greatest accuracy and dependability at high line speeds.

The new Sterling Brinomat dispenses Sterling Purified Salt *brine* into as many as 300 cans per minute. The well-known Sterling Saltomat deposits Sterling Purified Salt *tablets* from 10- to 250-grain size. And the dependable Sterling Bulk Salt Dispenser is used to dispense *bulk* Sterling Purified Salt.

If you'd like more information on these modern salt dispensers, including a guaranteed analysis of Sterling Purified Salt, phone our nearest sales office, or write to us direct.

International Salt Company, Inc., Scranton 2, Pa. • Sales Offices:

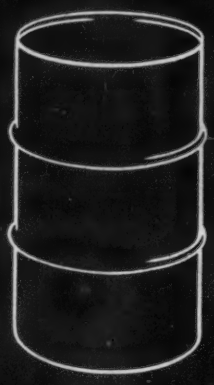
Boston, Mass.	Cincinnati, O.	Newark, N. J.	Philadelphia, Pa.
Buffalo, N.Y.	Cleveland, O.	New Orleans, La.	Pittsburgh, Pa.
Charlotte, N. C.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.
Chicago, Ill.			

Service and research are the extras in

STERLING SALT

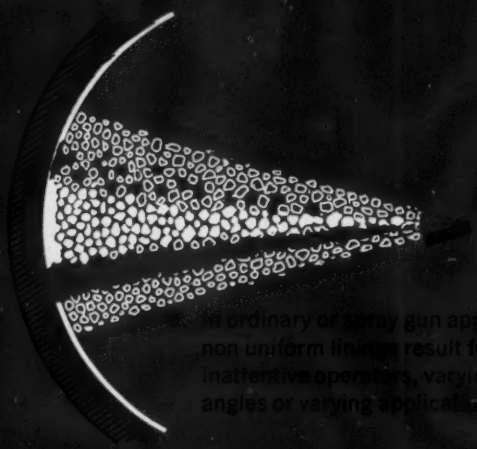
INTERNATIONAL SALT COMPANY, INC.

CIRCLE 23 ON READER SERVICE CARD→



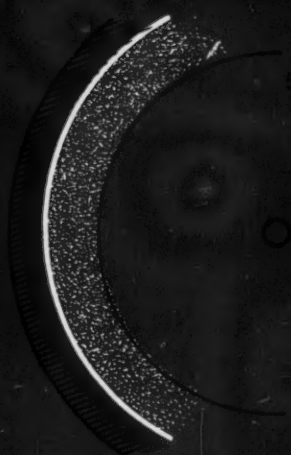
1. The lined drums you buy

2. may lack lining uniformity.



3. In ordinary or spray gun application, non uniform linings result from tired, inattentive operators, varying spray angles or varying application rates.

4. Human errors cause failures which permit contact between your product and steel, causing corrosion, contamination, customer complaints and costly losses.



5. In the completely automatic Rheem Centrifugal Spray, the rotor head always travels in and out of the drum shell at the same speed, at the same distance from the shell, and delivers lining material at a constant rate. Lining thickness is controlled to 1/10 mil. The result:

UNIFORM LININGS DRUM AFTER DRUM

when lined by

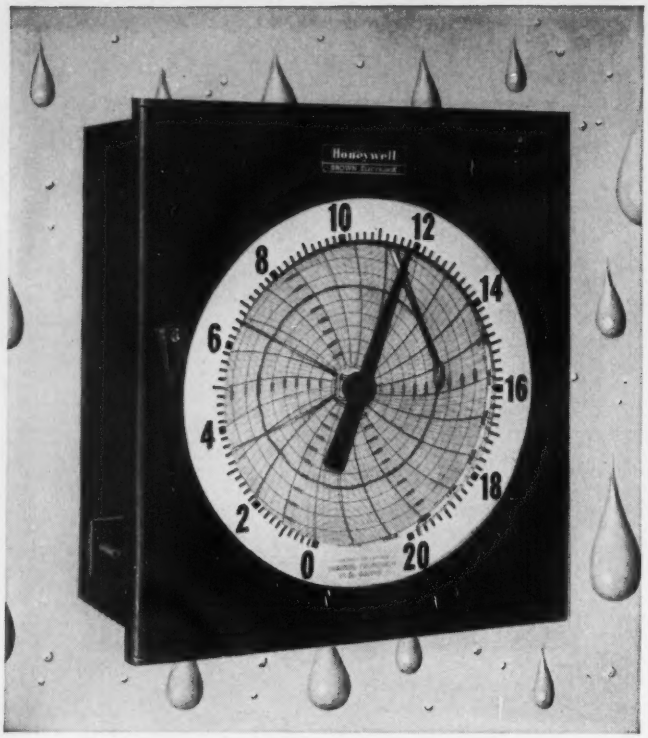
RHEEM CENTRIFUGAL SPRAY

And that's not all. For more than three years, Rheem Centrifugal Spray has been delivering lined drums free of pinholes or blisters, thin spots and skips or globs. Air turbulence is eliminated. Linings are cured by unique Rheem Vertical Curing in three stage, high temperature ovens. For more information, or help in developing a lining for a problem product, write the world's largest manufacturer of steel shipping containers at 1701 West Edgar Road, Linden, New Jersey. Plants across the country . . . Chicago, Houston, Linden, New Orleans, Richmond, Calif.; South Gate, Calif.; Tacoma. For other sales offices see the Yellow Pages.

Rheem

THE *MOIST-O-GRAPH* HAS BEEN TESTED AND PROVED WITH THESE MATERIALS:

POTATO SHEET
COTTONSEED
TOBACCO SHEET
FLOUR
OAT BITS
ALFALFA
OAT FLAKES
CASTOR BEAN
PEANUT MEAL
DRIED BEET BULB
BARLEY AND OATS GRASS
LIMA BEAN VINES
LINSEED MEAL
POTATO STARCH
PEARL STARCH



HONEYWELL *MOIST-O-GRAPH* measures moisture content from approximately 5% to 30% by resistance measurement, with a range of 0-100,000 megohms.

Better products, more profit... *AUTOMATICALLY* with a Honeywell moisture control system

Automation makes any process pay extra dividends in productivity, product improvement and profit. One of the many ways Honeywell can bring you the advantages of automation is through precise, automatic control of moisture in granular and sheet materials.

The Honeywell *Moist-O-Graph* system gives you positive quality control, and lets you maintain a profitable moisture balance in your products. It gives you a continuous, permanent record of moisture content. It leads the way to tangible savings in your drying operations, and lets you use your manpower more productively. Presently installed *Moist-O-Graph* systems have paid for themselves in six months.

Let Honeywell survey your process for best possible application of the *Moist-O-Graph* system. Get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

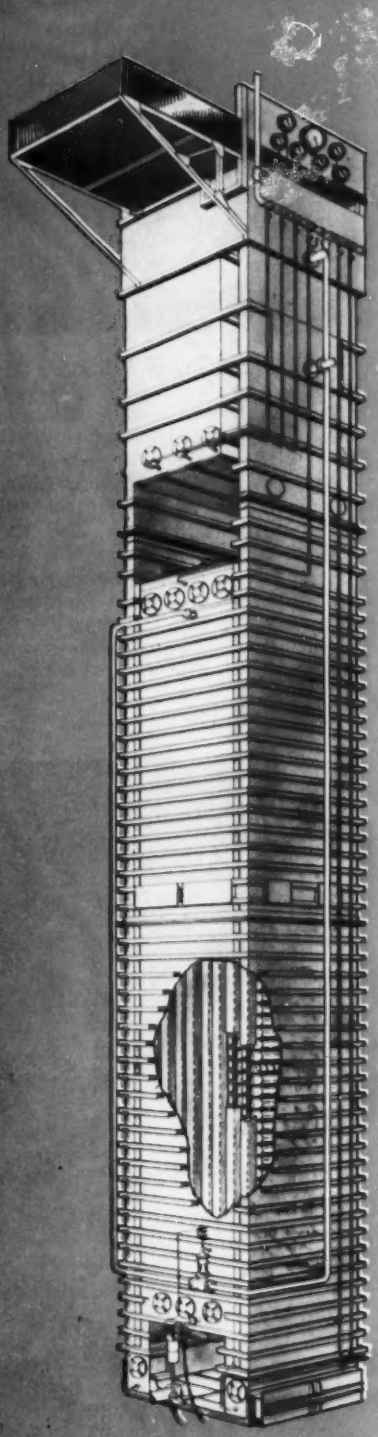
Honeywell

H HONEYWELL *First in Control*

CIRCLE 25 ON READER SERVICE CARD→

Now, from France, for your plant and profits

. . . a sensational (and proved) saving step in canning!



For a long time, continuous pressure cooking and cooling presented many problems in mechanics and heat exchange. *But now, a revolution from France!* Introduced just a few years ago, the genuine CARVALLO hydrostatic continuous cooker and cooler has been constantly tested, refined and improved. Today, it is considered the finest unit in the world, matching your own product quality standards.

Only the genuine CARVALLO hydrostatic pressure cooker-cooler gives you these exclusive features . . .

1. **Preheating and Cooling under Integral Counter Flow** saves up to 80% in steam and cooling water.
2. **Fully Automatic Self-controlled Unit,** directly coupled to seamers and labelers or casers, saves 100% in processing labor.
3. **Specially Designed Chains** are rugged, durable. Do not stretch or wear. The end of the carriers are closed by the chains, preventing jamming and lateral friction and damage to the cans and jars.
4. **Hydrostatic Controlled Pressure** insures an absolutely constant temperature during sterilization, eliminates transfer valves and all their troubles. Pressure variations inside and outside of cans are progressive! No exploded peas! No clouded juices! No leaking seams!
5. **Tubular Carriers Unattached to the Conveying Chains** — the same unit can process, without any change parts, cans, jars or bottles in a wide range of sizes and shapes. No jamming through dented cans or broken jars. Easy automatic loading and unloading. Carriers can be removed very quickly for yearly inspection.

Air mail or cable . . .

MAISON FRÉDÉRIC FOUCHÉ

8, Rue Eugène-Varlin, Paris 10, France

Fruit Juice On a Stick

Natural contents provide all the flavor, color, and appearance of Sunkist Growers' new frozen fruit juice bars.

Packed 6 to a carton, flavors include orange, lemon, and mixed fruit. Individual bars are packaged in bright-color foil bags for bulk sale.

Pilfer-proof aluminum foil protects and insulates carton contents, and provides striking eye-appeal. Colorful containers—.00035 foil laminated to 20-pt. board—feature self-locking end flaps.

Continental Can prints 5-color design on foil.

Circle 402 on Reader Service Card

Packages PL for Appeal

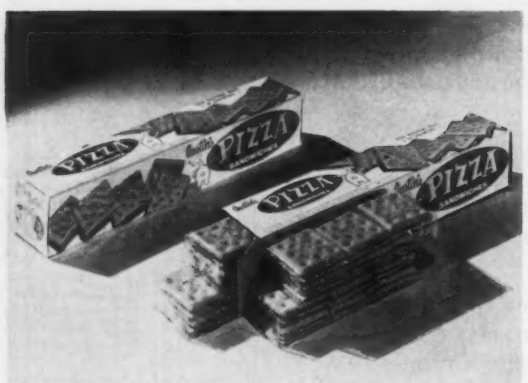
Complementary elements that accent "taste excitement" plus fruit-silhouette panels create instant identification on National Tea's own fruit pie overwraps.

Complements are cheese with apple, and ice cream with the other fruit pies. Cup of coffee is included for increased visual image association with "warmth" of dessert time and "good living."

New designs carry family resemblances in overall typography and color usage with fruit contents pictured in true-to-life detail.

Overwraps are by Crown-Zellerbach.

Circle 403 on Reader Service Card



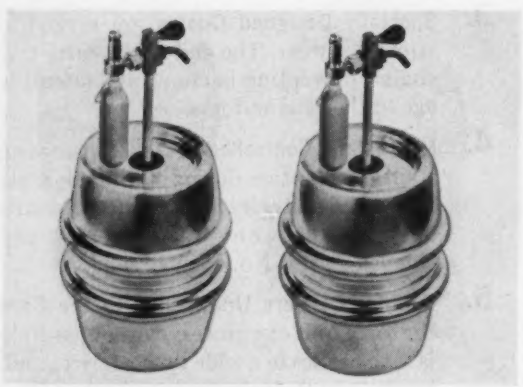
Latest Pizza Product—the Sandwich

Pizza sandwiches—real Italian pizza spread between crackers—is being introduced by Austin Biscuit Corp., Baltimore.

Snacks are wrapped in fractional packets of 6 to retain crispness and taste even after opened. Each bright, 4-color carton is overwrapped in cellophane for maximum shelf-life and contains 4 packets of sandwiches.

Designed with eye-catching sparkle for self-service selling, containers are printed by Gordon Cartons in cellophane supplied by Olin Mathieson Chemical Corp.

Circle 404 on Reader Service Card



"Tapless" Home Keg for Beer

Draft beer in a new 3.87-gal. aluminum keg with a revolutionary "tapless tapping" system is now being offered to home consumers by Reynolds Metals Co.

For party and picnic use, the 60-glass keg contains a new "in the barrel" dispensing unit made of surgical rubber. Rubber jaws and rod-seal allow the tap rod to be inserted and removed without loss of pressure. "Home-Draft" rod incorporates a built-in plastic faucet having a pre-set pressure regulator and refillable CO_2 cartridge. Champion Sales Builders Co. supplies both unit and rod.

Circle 405 on Reader Service Card

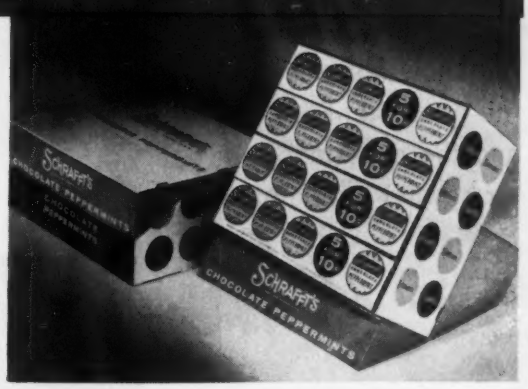
Morton Salt Gets Mate

Pepper in 1/6-oz. polyethylene miniatures are being test-marketed in Arizona by Morton Salt Co.

New miniatures (set of 3 for 19¢) are primarily companion items for Morton salt miniatures. Larger pepper sizes are not now contemplated.

Arizona was chosen because of its outdoor-living weather condition, allied with the new product's appeal for picnics, coookouts, etc.

Normal expansion developments and spread of increased operating costs, rather than a formal diversification program, are cited as reasons for pepper marketing. National distribution is expected in the Spring.



Pack 'Em Up—Stack 'Em Up

Previously sold loose in dump dispensers, Schrafft's chocolate peppermints are now put up in 5-for-10¢ packs, and bright new retail containers are employed.

New displayer, by Eron & Eron, provides perfectly fitted stand that holds 24 packages at a convenient "pick me up" angle.

Striking red and white displayer contrasts with four visible white-and-green mint packages. The 5-for-10¢ price print fills out the illustrated candy row, designed for a "candy is fun" image.

Schrafft's logo plays a featured role on both package and displayer. **Circle 406 on Reader Service Card**

Cookies for the Home Circle

"Warm" and "homelike" are adjectives for the realistic in-use settings now appearing on package design for Burry's "Happy Family" cookie assortment.

Designers Lippincott & Margulies introduce a new red on white logo to replace the old white on blue. New triangle figures are used in napkin, dish, and sides to simplify design.

Soft yellow background and sharply detailed photography, with a suggestion of coffee cups and pot, are shown to intensify association with "hospitality" and "taste appeal." **Circle 407 on Reader Service Card**

Market "Double Size" Jell-O

Available nationally this month is a new "double size" package of General Foods' Jell-O. The new 12-oz. carton will supplement the popular 6-oz. package in use since the dessert's introduction in 1897.

According to George R. Plass, Jell-O marketing manager, the larger unit was developed to serve the consumer who had to purchase two of the 6-oz. cartons to meet their family's menu requirements.

Strawberry, raspberry, and cherry flavors will be available immediately. The complete line of 10 flavors will continue to be available in the 6-oz. size.

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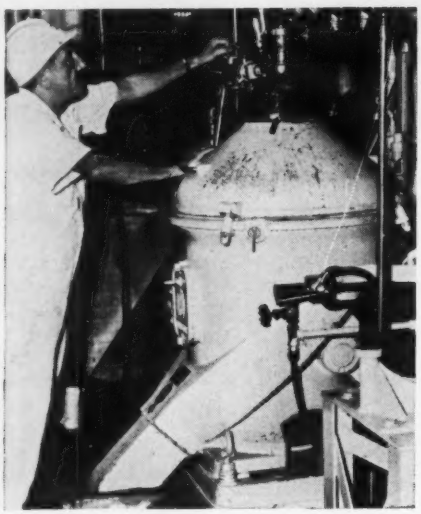

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For details, write our Pfaudler Division, Dept. FE-119, Rochester 3, New York, for Bulletin 946.

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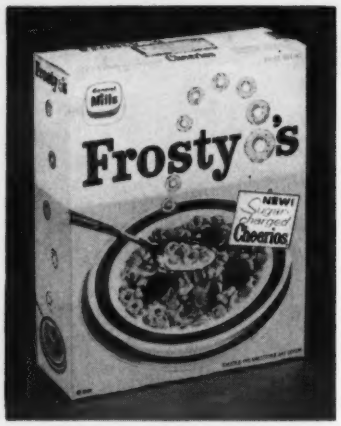
Packages & Products



SUGAR-COATED Frosty O's make debut as General Mills' latest cold cereal. New oat morsels are the company's well-known Cheerios cereal in new pre-sweetened form.

GM Markets "3¢ Meal"

"Multi-Purpose Food"—a dietary protein concentrate—is now being manufactured and marketed by General Mills, Inc.

After successful use as a stable protein food in 100 foreign countries, this so-called "3¢ meal" will be introduced initially to institutions, schools, relief agencies, camps, and restaurants.

Two ounces of MPF provide 1/3 of recommended daily diet for protein, vitamins A, D, thiamin, riboflavin, niacin, iron, calcium, phosphorous, and iodine.

New Product Shorts

Peas in Onion Sauce, packed in a boilable bag, are a new product of Seabrook Farms.

Finely Grated pure Romano cheese is now marketed by Kraft Foods in standard 3-oz. jars.

Instant Onion has been introduced by Woolson Spice Co. in convenient new flake form.

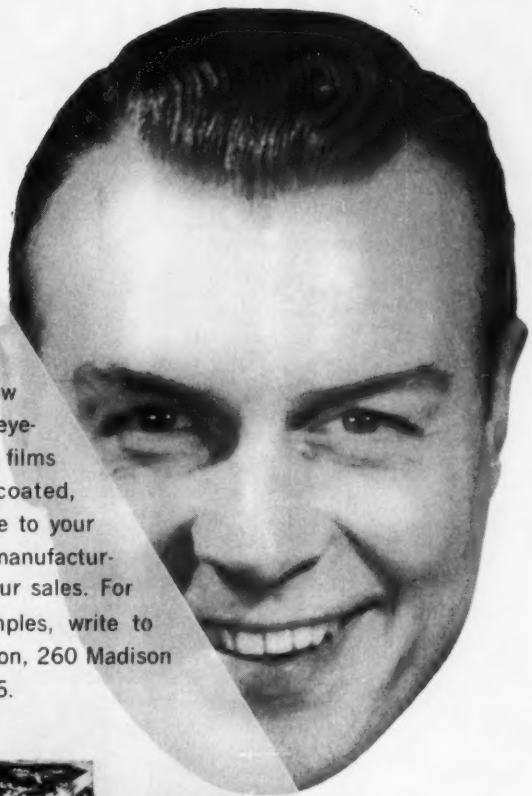
Packaging Briefs

Sift-Proof Bag with heat-sealed construction and a flat block bottom is now offered by Continental Can Co.'s Flexible Packaging Div. in capacities up to 25 lb. (408)

Shorter Bottle with wider base has been adopted by R. T. French Co. for its barbecue sauce.

Foil Labels and Taller Jars are changes in Borden's None-Such Mince Meat packaging.

Just Between You and Your Customer



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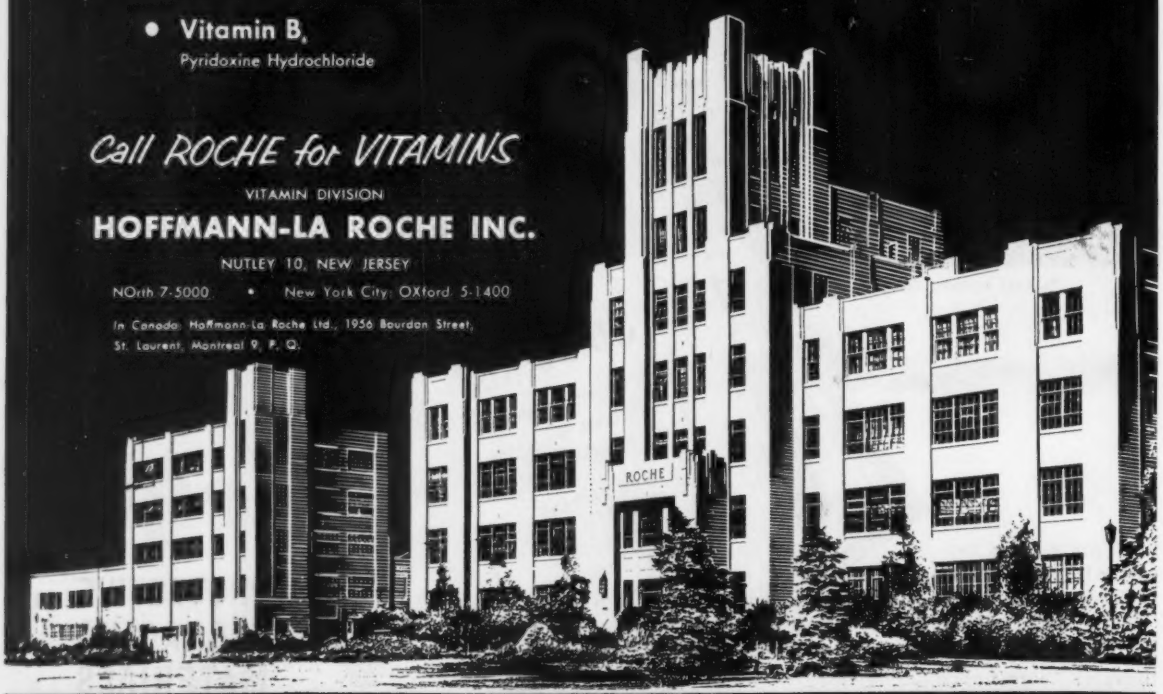

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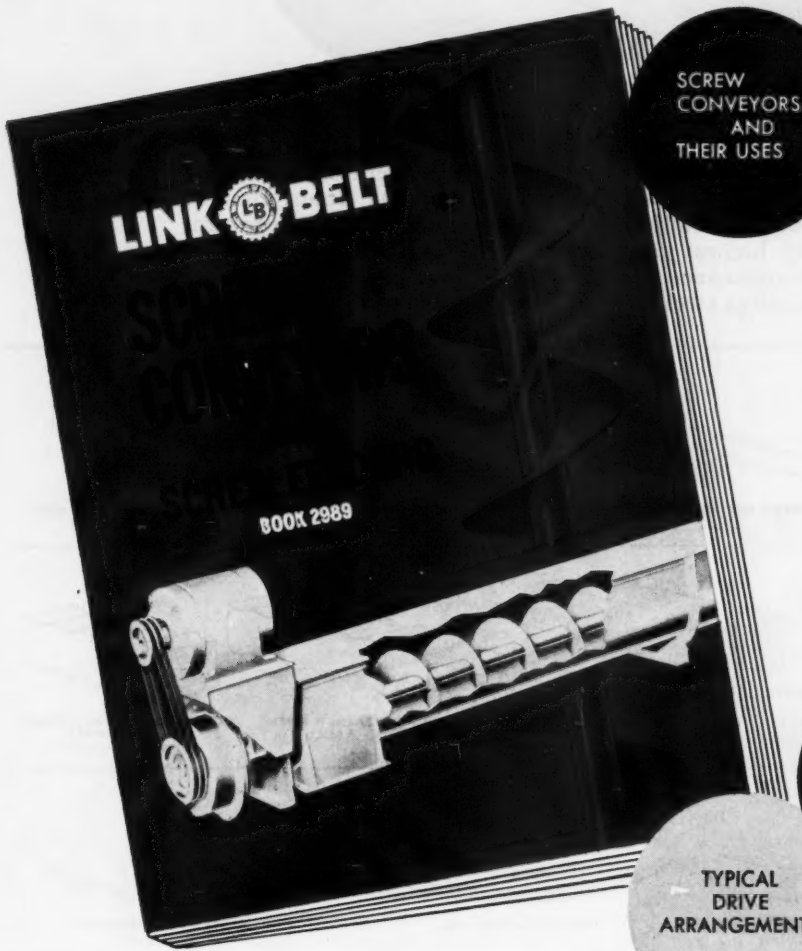

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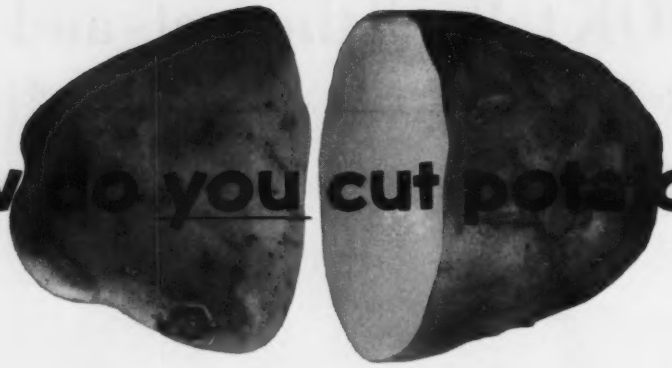
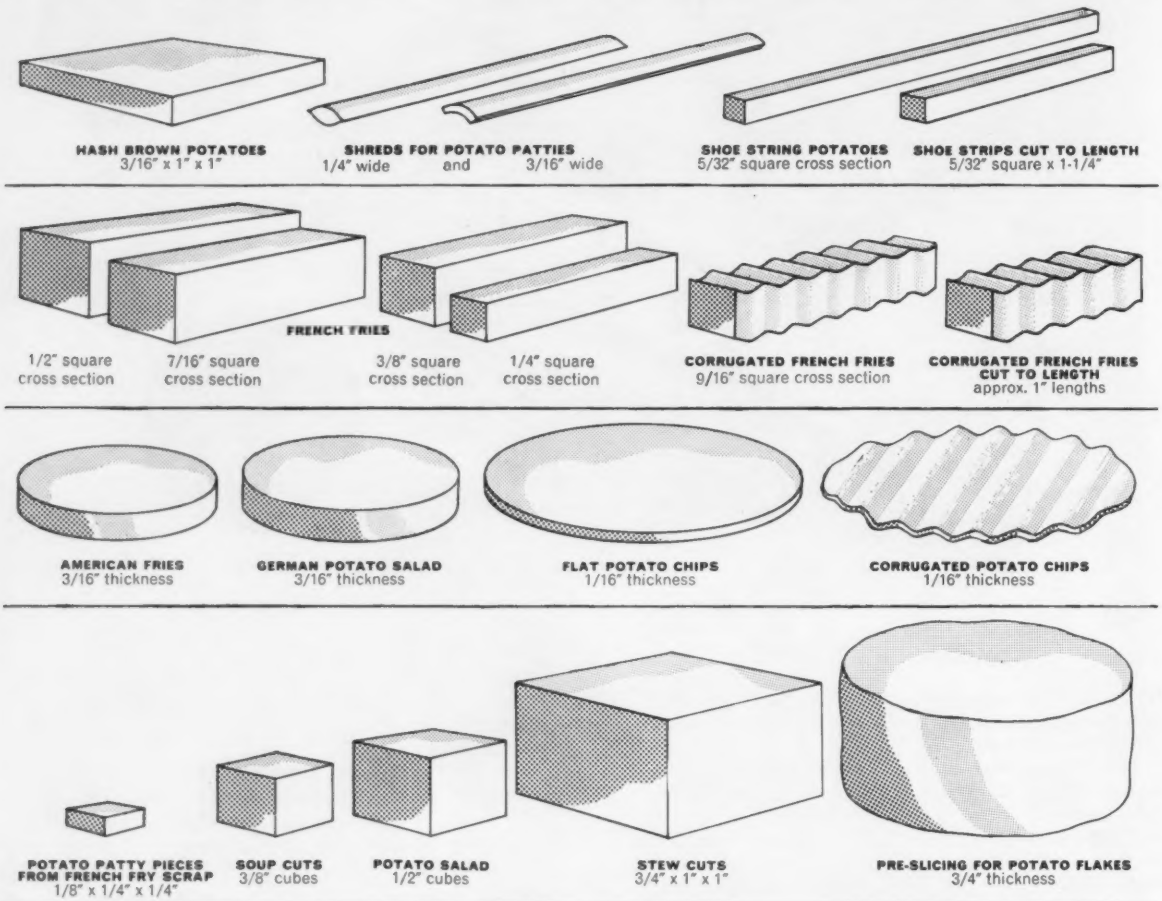


New potato shapes, created to *revitalize* lagging appetites, are making important sales news all along the nation's shopping fronts. Urschel machines can cut practically any shape you want. They feature precision uniformity, highest yields, lowest product loss, unusually high capacities, low maintenance, and complete product protection (product contacts only stainless steel or special non-corroding metal surfaces).



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Don't Be Among Casualties on Additives Day

WILL MANY food formulations or packaging materials be casualties come March 5—final effective date for the Food Additives Amendment?

FE put that question to FDA's Commissioner Larrick. Here is his answer: "I don't look for any catastrophe. Most of the problems will be worked out satisfactorily."

Manufacturers of many foods and packaging materials have been making substitutions on their own, or finding new ways to make products that might otherwise fail to meet FDA requirements. Principal worry, as Mr. Larrick sees it, is that some polyethylenes used in wrapping fatty foods may have to be dropped.

Food manufacturers producing animal feeds containing newer additives may face particularly troublesome problems. The stilbestrol and arsenical types of additives, for instance, come under the shadow of the famous cancer clause in the Additives Amendment. They don't know how to test these for cancer. And the same goes for some food and packaging additives.

Don't count on new list of OK items

Many in the food and packaging fields have been hopefully awaiting a new list of approved additives. But Larrick told FE that issuance of such a list was not imminent. So you'll have to go to FDA for information as to the acceptability of any still questionable additive. And if you get a negative answer at this late date, your additive's goose is temporarily cooked.

Some in industry have looked to postponement of the effective date. But the attitude of FDA's super-boss, Secretary Flemming, has been against any blanket extension. True, each request for postponement will be considered. But where firms have been dilatory, no postponement will be granted.

Larrick feels that industry efforts have been sporadic. Food and chemical firms which have long dealt with FDA started early, went to FDA to discuss their problems, and got to work. It seems, however, that many packaging people did not know quite what to do. The Commissioner is quite concerned that some have spent too much time talking, not enough testing.

But the Commissioner salutes the industry. "I would like", he told FE, "to thank the good majority of the scientific fraternity in the food industry which worked to get the law passed—and have been working since to make the transition as smooth as possible."

It's up to you to get chips in line

Faced with an appreciative but conscientious FDA, you can expect firmness tempered with a desire to help solve your additive problems. But the responsibility is yours to get your ingredient and packaging chips lined up. If you haven't already done so, don't waste any time in doing these things:

1. List your additives and packaging materials.
2. Check off those in the clear, consulting with FDA, suppliers, and toxicologists for advice on acceptability.
3. Make approved substitutions for items in doubt.
4. Get toxicity studies under way (by you or suppliers) where suitable substitution is impossible.
5. Be sure your labels bear the required names for listed additives. This one can be really troublesome, what with the frightening chemical names.

Our industry and its suppliers are on trial. So are FDA and the Amendment.

Industry must do all it can to meet requirements before March 5, or it will have no excuses. FDA must be judiciously tolerant when the deadline arrives, or it will build a back-fire. Given these two conditions, the Amendment must function without serious food and package casualties. If it does not, some changes should be made—especially in the cancer clause!

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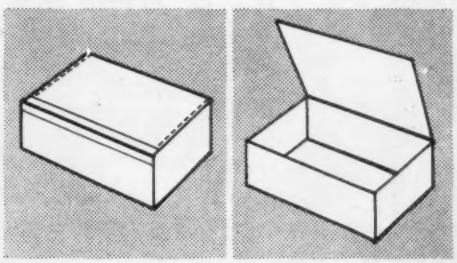

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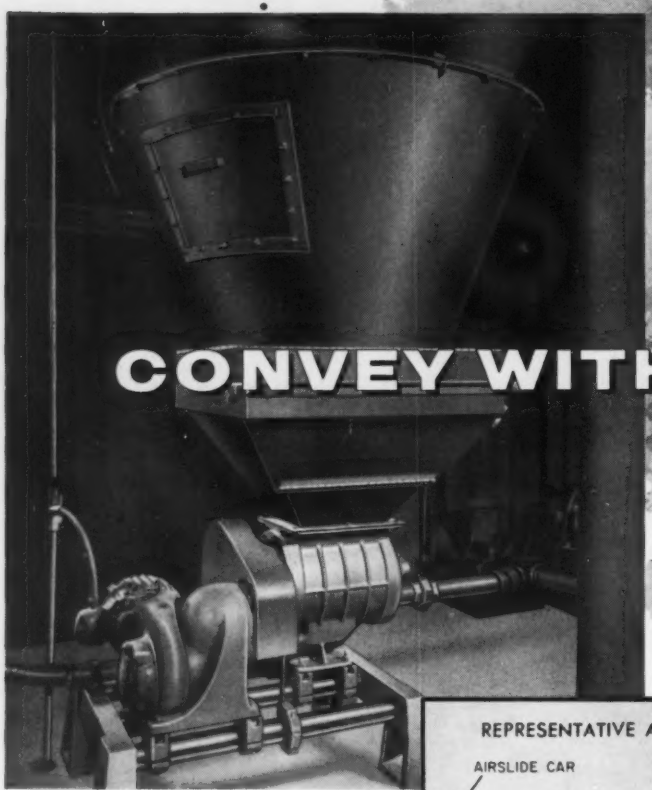

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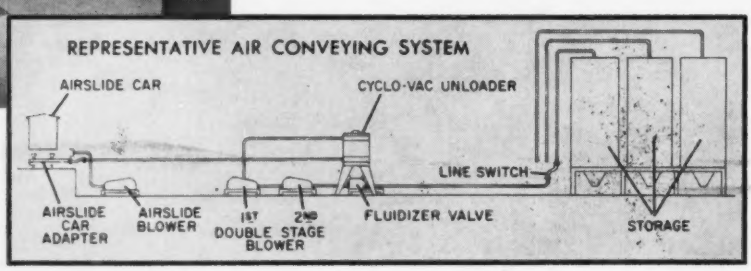

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CIRCLE 37 ON READER SERVICE CARD→

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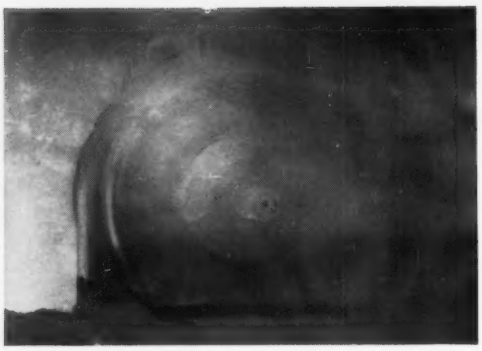

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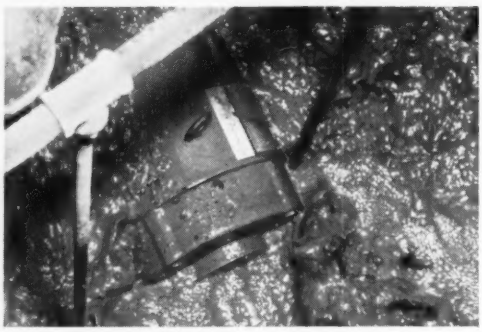

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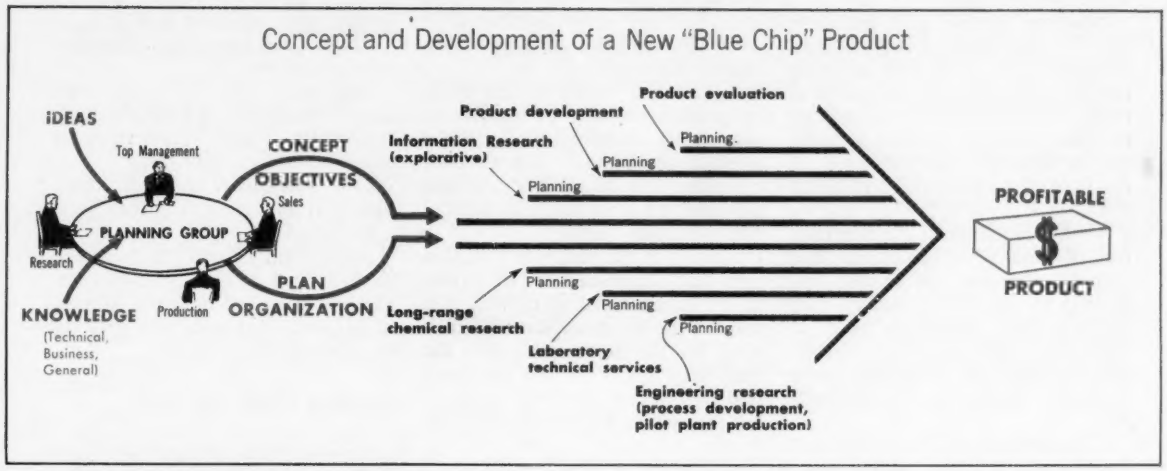

THE RESEARCH PROCESS is a planned, cooperative, cumulative activity—from conference table to debut of new item. Shown are the many key R & D areas that contribute to the final successful result.

How to Plan Research for Profit

With annual costs averaging $23,000 per researcher, your R & D working approach must be careful, exhaustive, orderly—and solidly in line with business objectives. Efforts should be 'teamed', dynamic

Part I: Objectives and Costs*

AKSEL G. OLSEN

. . . has chalked up an outstanding score in shaping high-performance food research—thus brings eminent ability to bear in this "weighing of ingredients" demanded for research success.

Armed with a Ph.D. in Agricultural Biochemistry (U. of Minnesota), he launched his fertile work in the industry as a Research Chemist for the Post Cereal Co., parent organization of General Foods Corp.

Later, he transferred to GF's Central Laboratories, Hoboken, N. J. And he brought up the front rank when the company opened its new Research Center at Tarrytown, N. Y. Here, he became Technical Director, Research Planning, a post he held until his retirement following 34 yr. with GF.

Active in IFT, he was several times a Councilor, then went on to become National Treasurer, President Elect, and National President ('58-'59),

He now resides at Harbor Bluffs, Largo, Fla.

WE MAY DEFINE commercial food research as "the organized application of science to develop useful, profitable solutions to previously defined problems related to the company's business."

When we say "useful" and "profitable," we must keep the consumer in mind—for it is neither useful nor profitable to develop something he doesn't want, or won't buy.

But before tackling the 'how' of successful planning, let us carefully examine the several basic factors involved.

It is my observation that the modern consumer looks primarily for four qualities in the products purchased: (1) Palatability, (2) convenience, (3) economy, and (4) nutrition.

Palatability includes all those quality factors that make the product attractive to the consumer, such as

* Concluding Part II, Managing the Team, will appear in a subsequent issue.

eye appeal, flavor, texture, and overall acceptability.

Convenience, too, gets much attention. However, it is not a "quicky" substitute for quality. For the long haul it must be convenience with quality.

Economy's importance is obvious as long as food is a major portion of the family budget.

Nutrition in the past has been taken for granted by a large number of consumers. But they are now becoming more and more aware of nutritional requirements. I am sure that an increasing number of foods will be developed and marketed on the basis of a substantial nutritional story.

That does not mean the consumer will demand a well-balanced "dog dinner." Humans like variety, and as long as the diet is varied, each product need contribute only its share to the balanced diet. Any attempt to eliminate variety may prove decidedly unpopular and unprofitable.

The products of tomorrow will meet more exacting requirements than in the past, but the consumer will still use the above four points of evaluation, with full emphasis on quality and increasing emphasis on nutrition.

What Are the Objectives?

Since the corporate growth is so completely dependent on consumer products satisfaction, the objective of any research program can readily be spelled out as follows:

A. Consumer protection – clean products, protective packaging, nutritive value, and keeping quality.

B. Consumer satisfaction – palatability, economy, convenience, and uniformity.

C. Product franchise protection–quality improvement, competitive costs, and raw materials surveys.

D. New-product business–novel salable products.

All research efforts should relate to problems in one or another of these fields. Research in any one is research for profit. But properly conceived and directed, it will also be research for the common good of the consuming public.

Since it is the customer's satisfaction that determines size of a company's business and its growth, it is realistic to recognize that what is good for the customer is also the long-range good for the company. Use of research advances to shortcut the customer is never good business.

How Much Does It Cost?

Total value of food consumed in the US in one year is now over $75 billion, and it has been estimated that about $37 billion of this is sold through grocery stores. How much research does the food industry do to support this size business?

Best available statistics are now several years old, so we shall need to extrapolate in order to estimate where we are today.

According to the National Science Foundation Survey,* 1953 saw a total of 1,250 food companies supporting research with an aggregate budget of $54,200,000 for research and development. These companies employed 14,400 scientists and engineers, of which only 4,000 (27.5%) devoted their full time to R & D.

These 4,000 researchers were classified as follows:

Engineers–900 (14.8% of total number employed in food industry).

Chemists–1,840 (38.9% of those employed in food industry).

Life scientists–750 (agricultural, biological and medical scientists).

Others–510.

Average annual cost per researcher in 1953 was $15,000. This compared with an "all industry" average of $27,000. But costs have gone up considerably since then.

Current Costs Up

Figures received from five large food companies (in response to a limited personal survey) indicate that the average annual cost of maintaining one professionally trained research worker may vary from $18,000 to $30,250. We may assume that this large spread is due to differences in (1) accounting practices, (2) classification of personnel, and (3) proportioning of supporting personnel to professionally trained workers according to the varied types of research and approaches employed.

If we accept all figures, the average annual cost per professional researcher is $23,350. On the other hand, if we eliminate the two extremes, our average would be $22,800. The latter I believe is a conservative figure.

Assuming that about 5,000 scientists and engineers are now employed full time in R & D, we come up with an annual research budget of about $114,000,000, which is approximately 0.3% of sales through grocery stores. On that basis, the overall food research budget is not very impressive.

There appears to be a positive co. relation between research expenditures and size of company. On the basis of the 1953 survey, bulk of the research money was expended by a few large companies–34 with over 5,000 employees spending 64%,

PROGRESS CAN BE IMPEDED by the planner who's overly fond of his own ideas, constantly fears they'll be contaminated by ideas that others volunteer.

* N.S.F. 56-16, Superintendent of Documents, US Government Printing Office. (Price 70¢)

while the large number of small companies spent comparatively little. There is no current indication that this situation has changed.

But regardless of the size of the total research effort, an activity that costs almost $23,000 per year per scientist needs to be most carefully planned. Unfortunately, much research effort is based on a "cut and try" approach. Even wishful anticipation comes into it.

Planning vs. Serendipity

Horace Walpole coined the word "serendipity" to denote the faculty of making lucky and unexpected "finds" by accident. A story, "The Three Princes of Serendip", was the origin of the word. The princes were always discovering things they were not looking for.

Some business executives are apt to anticipate such extra dividends from research, but research only rarely cashes in on the totally unexpected. New products and new processes usually result from careful planning rather than lucky accidents.

It is true that over the years some exciting developments have come about because keen researchers observed and cashed in on unexpected discoveries. But success normally comes about only because a regular planned program was underway.

Loren B. Hitchcock has been quoted as saying: "Big money can be lost faster and less conspicuously in research than in any other department of the business."

My own conviction is that big money is as often lost by overlooking opportunities as it is by spending too much money on the wrong project.

In any event, research management is subject to the same operating principles as business management: **Planning, Organization, Directing, Coordinating, Controlling.**

Planning comes first. The others, I believe, will tend to fall in line. But let's not assume that even good planning can get you any place without a good follow-through.

A plan is just another piece of paper unless followed by the right execution—and that means precise organizing and directing of the effort, as well as coordination and control.

However, you should be prepared to replan as soon as your results indicate you are on the wrong road.

Don't consider a plan as a sacred cow, let it be dynamic, not static.

—*End*

R & D, Its Birth and Growth

SPOILAGE PROBLEMS facing canners in 1894 were the subject of separate investigations by Prof. Harry L. Russell at the U. of Wisconsin, and Samuel Cate Prescott and W. Lyman Underwood at M.I.T.

Up until that time, canning was not much advanced over the practices of Nicholas Appert more than 80 yr. before. But now it became a rapidly growing technology, stimulating a similar approach in other processing areas.

In contrast to this basic science, the same period saw the empirical approach —as reflected in marked activity in the ready-to-eat cereal field. Shredded Wheat, Grape Nuts, and the first wheat flakes changed breakfast habits of America.

We are still using both approaches in our commercial research and development laboratories.

The first "convenience dessert product"—Jell-O—appeared in 1895. But it wasn't an immediate success, and the business was sold in 1897 for $500.

Knowing what has happened to this product since suggests that either the consumer was not yet ready for such a convenience item, or the quality didn't meet with his approval. It is likely that both of these factors played a part in the initial poor reception.

Aunt Jemima pancake mix was marketed during the early '90s, and the first packaged cake flour, Swansdown, was advertised in the "Ladies' Home Journal" shortly thereafter. (Real cake mixes did not appear until the World War I sugar shortage, and even then had transistory success because of initial poor quality.)

Enter Corporate Labs

During the first 20 yr. of this century, food research was mainly carried on at educational institutions and government laboratories. But rapid changes occurred after 1920.

The parent company of General Foods Corp., Postum Cereal Co., hired a biochemist, with a Ph.D. degree, about 1922 as director of research. His first job was to set up laboratory facilities and obtain an assistant. By 1925 the laboratory staff totaled three professionally trained persons, with less than half a dozen unskilled helpers. By 1945, the company's Central Research staff had grown to include 103 professionally trained persons, plus a supporting staff of 90.

This laboratory is now the General Foods Research Center at Tarrytown, N.Y., with a staff of over 600 (250 professionals, 108 supporting technical, 245 others). In addition, approximately 300 persons are engaged in research and development work in divisional laboratories.

The Tarrytown facility has about 252,000 sq.ft. of laboratory working space. The R & D staff here is not concerned with quality control. This is the responsibility of separate staffs in laboratories at each division. It is mainly concerned with new products and new processes, improvement of old products and processes, and support of long-range studies in many fields related to future plans and company growth.

A similar example in a closely related field is the American Can Co., which had an R & D staff of less than 20 in 1925. It grew to approximately 150 by 1945, and today totals about 300. The new research facility at Barrington, Ill., has about 100,000 sq.ft. of space. Other laboratory areas supply an additional 50,000 sq.ft.

Not all of this company's research pertains to food, but its growth has been so closely allied to food that these figures are pertinent to the story of the rise of research in the industry.

Another example is General Mills. This company had not yet established a and that has now grown to over 360, operating in a facility of about 160,000 research laboratory in 1925. But by 1945, its R & D roster numbered 202, sq.ft. However, like American Can, not all of General Mills' R & D staff are engaged in food research.

A final example is National Dairy Products Corp. Its constituent companies had less than 25 people doing research in 1925. But the staff had grown to about 200, with laboratory facilities of some 220,000 sq.ft.

These examples illustrate the rate of growth of R & D in the food industry starting less than 40 yr. ago. Cost of maintaining these research staffs are indicated in the accompanying article.—A.G.O.

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CODED INFORMATION for sales analysis program is recorded on paper tape (A) at same time clerk types customer's invoice (B) on special billing machine. Complete double-duty equipment costs around $10,000, but punched tape attachment that hooks on existing billing models can be bought for around $1,500.

REPORTS that come back to Manischewitz (tape converted to punched cards and run through electronic data procesing machines) are studied by Controller Judson Schiebel (left) and the Director of Development Planning, Frank Edelstein.

GRAPHIC TREATMENT emphasizes key points during presentation of reports to top management groups.

MARKETING

Electronic Sales Check For Faster Control

Monthly analysis of costs, product, and customers gives Eastern processor instant-facts on operation trends . . . Result: Quicker action on what's needed to plug cost loopholes, sharpen strategy

KEEPING TABS on what's going on in the field is a critical part of successful cost control and plan-ahead strategy.

That's because of the need to uncover weak spots before they become critical, curb profit-draining allowances, and maintain flexibility in maneuvering against competition.

Furthermore, each corporate department wants fingertip-facts on which to base strategy. Production needs them for scheduling runs economically. Sales has to know who isn't carrying his share of the load. Financial requires fresh data for inventory control. And top management relies on fast facts for important decision-making.

A refined sales analysis, begun a year ago, now gives department heads and chief executives at B. Manischewitz & Co. (leading Kosher foods processor) a monthly detailed breakdown on products, customers, and costs. In addition to making more facts available faster, manual labor costs have been cut, and planning has been put on the scientific basis called for by today's competition.

The program, set up in conjunction with Service Bureau Corp., begins at the moment the customer's invoice is made out. A special billing machine (Friden) automatically code-records on a punched paper tape the information contained in the sales order.

This dual-function unit brings immediate savings because it eliminates what would be a subsequent manual key-punching operation. Obviously, it saves considerable time, since the key-puncher would have to wait until all the billing had been completed.

Twice a month, the tapes are sent to SBC, where they are converted into punched cards for EDP (electronic data processing). Once they've been sequence-arranged according to pre-established audit controls, they're run through high-speed EDP machines.

Five Helps

The vital information is received in the form of five reports, each of which opens up an area of improved operations. These continuous checks (see illustrations) are:

1. **Invoice register recap,** listing the quantity of merchandise sold to each customer, dollar sales, credit or freight allowances, and the total amount.

This valuable report has already halved manual operating costs in the controller's department, and cut billing procedures to a minimum 2 weeks.

An extra bonus was realized during the Passover holidays—the firm's most important selling season. Previously, the results weren't known until at least 6 weeks later. This year, however, the complete picture came through in less than 3 weeks.

2. **Miscellaneous and freight charges,** spotlighting those hidden costs which can be very damaging if uncontrolled – promotion allowances, spoiled and damaged claims, freight rates. Because the factors are now broken down according to customer, the company profits from a better insight into the "why and when" of certain costs. Remedial ac-

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

tion is easier, because if a particular cost factor or customer is out of line, the data tells where to start.

3. Sales by distributor by product, revealing for each customer and each product he handles, case quantity and dollar volume for the month and the year to date, as well as average unit prices. Data are segregated according to the subsidiary company setup.

This report has led to more scientific pricing. While the company had been able to calculate a product's average selling price on a company-wide bases, it wasn't able to break it down by distributor and operating division. Now it is in a position to target those areas where product prices are at uneconomic levels.

The salesmen get this report for each city in their territory. By comparing each distributor's purchases against the company-wide pattern, variations in prices become readily apparent.

4. Sales by company, by product, itemizing each subsidiary's quantity and dollar volume, per individual product, both for the current month and the year to date. Also included is the average unit price.

This analysis gives top management a running account of how each operating division is making out with each item.

5. Accounting report, summarizing company-wide totals for each product–quantity and dollar volume for the current month and the year to date, as well as the average unit price. Both this report and the preceding one go to Sales for use in planning market strategy.

Stronger Tone

Corporate operations have been strengthened several ways by these reports.

For one thing, clerical workers are used more productively on other research projects. In the past, compiling of the necessary data on Passover sales, for example, kept four people busy for several weeks. Now,

5 Important Aids to Better Planning

Season	Company	Distributor	Date	Invoice Number	Quantity	Sales Amount	Credit or Freight	Total Inv. Amount
1	1	ABC Grocers	6/08/59	8686	1930.0	$1236.88	15.57cr	$1221.31
1	1	S. Schultz	6/08/59	8687	300.0	675.00	21.00	696.00
1	1	B. Farber	6/09/59	8688	264.0	1666.92	19.05cr	1647.87

Data in most reports are segregated according to "season" (giving a fix on Passover and other key selling periods) and according to "company" indicating how subsidiary divisions are making out. Invoice register analysis (above) shows volume done by each customer. Other reports cover . . .

Season	Company	Distributor	Description	Account Code	Freight or Miscel. Amt.
1	1	ABC Grocers	Promotion Allowance	370	$ 46.25
1	1	S. Schultz	Spoiled & Damaged	410	42.32
1	1	B. Farber	Freight	504	24.35

. . . Miscellaneous and freight charges . . .

Season	Co.	Distributor	Product		Current Month		Year to Date		Avg. Unit Price
			Code	Description	Quantity	Amount	Quantity	Amount	
1	1	ABC Grocers	104	Reg. Matzo	110.0	686.40	727.0	4663.36	6.41
1	1	ABC Grocers	215	Borscht	100.0	225.00	5100.0	11475.00	2.25
1	1	ABC Grocers	328	Chicken Soup	50.0	200.00	405.0	1531.20	3.78

. . . Sales by distributor product . . .

Season	Company	Product		Current Month		Year to Date		Average Unit Price
		Code	Description	Quantity	Amount	Quantity	Amount	
1	Company A	104	Reg Matzo	224.0	1433.60	1508.0	9651.20	6.40
		215	Borscht	200.0	450.00	1470.0	3307.50	2.25
		328	Chicken Soup	116.0	440.80	840.0	3183.60	3.79

. . . Sales by subsidiary company by product . . .

Season	Product		Current Month		Year to Date		Average Unit Price
	Code	Description	Quantity	Amount	Quantity	Amount	
1	104	Reg. Matzo	440.0	2786.51	3216.4	20720.63	6.38
	215	Borscht	427.0	960.75	2450.0	5512.50	2.25
	328	Chicken Soup	220.0	856.60	1570.0	5966.00	3.80

. . . And overall accounting for individual products.

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one girl compiles the information on the paper tapes, freeing the other employees for additional assignments.

Long-range planning has been graduated to a more scientific basis. With more accurate data turned up in shorter time, the company is in a better position to gage volume during peak selling periods, meet shifts in market demand, and balance production runs against inventories.

Sales forecasting, a necessary ingredient in market strategy today, benefits from the control program, too. Quotas used in the forecast are drawn from three sources—sales department, distributors, and market research (which works on long-trend analysis).

Now that monthly reports furnish a running guide as to how well projected goals are being met, the company more readily revises forecasts to meet changing conditions. This can be very important when you're planning production of highly perishable or seasonal items.

Marketing strategy has been sharpened. There is now tighter control of promotion expenditures through the report on miscellaneous charges, and shrewder selection of those merchandising techniques best fitted for a particular product.

In fact, the benefits have been so significant that Manischewitz is studying ways to expand the reports and make them even more useful. One objective: Securing more information from the reports themselves.

For example, if quota figures are included in the distributor-by-product, company-by-product, and accounting reports, there will be a clearer picture of performance in relation to sales goals. At the same time, the reports would indicate where a salesman or distributor needs help, what products may not be worth carrying, and what revisions in the annual forecasts may be necessary.

Addition of more items in the miscellaneous allowances report also could be helpful. This would pinpoint more effectively those areas where costs are getting out of line, making counter action easier to direct.

Another aim is to expand the sales analysis program (currently limited to the wholesale operation) to the Chicago retail operation. Such a step is seen multiplying the benefits already received.—*End*

DISPATCHER at console checks map to see which driver is nearest to call-in order. Inset: Routeman can also phone in to office (as for help on repairs).

Better Service—by Radio

Cost savings, too, as 2-way talking system keeps company in constant touch with salesmen out on routes

WITH FEDERAL OPENING of additional frequencies for business-operated 2-way radio systems, alert marketers are making more use of this method of fast communication to increase sales efficiency. One firm thus profiting is Vita-Cee, a St. Louis fruit juice bottling concern that has its own home delivery service.

The 2-way setup, says Pres. Martin Schlitt, has (1) cut down costs of answering small-unit emergency call-in orders, and (2) upgraded the sales training program that covers 19 home delivery driver-salesmen and 8 wholesale and commercial routemen. Installed a year and a half ago, the system has helped the company to boost sales 20%.

Since driver-salesmen call on each account only once a week, housewives often phone in their orders for special delivery when their supplies run out. Before adding the radio, these call-ins had to be held until a man in the general vicinity made a twice-daily report by phone. Then he was sent on a time-costly trip for the sale often of just one bottle.

With radio, the office dispatcher, who is in constant contact with all drivers and supervisors, knows who is closest to the call-in, and frequently can have the order serviced inside an hour. And if a second order comes in (prompted by a housewife seeing the truck), the dispatcher immediately informs the same driver, thus keeping down extra mileage and time. From 60 to 100 call-ins are handled this way each day, Schlitt estimates.

In addition, the system figures in Vita-Cee's active sales supervision program. The supervisors—who train men, prod them to better sales, and encourage them on poor days—used to lose as much as 2 hr. daily in searching out their men. But with the new radiophone, they can locate them "in no time."

"And," says Schlitt, "the men find that this closer supervision really helps them to increase sales and earn more commission."

The radio also helps in checking through on truck breakdowns—especially important in fringe areas, where public phones are scarce.

Installed by Motorola, the system includes mobile units ($685-$700), base station transmitter-receiver ($1,300), and dispatcher's control console ($200). Including operating expense and maintenance, total cost is reported to average less than $1.50 per mobile per working day.

—*FE Staff*

Cashes In on Own Label

That question, "Shall we pack their brand—or ours?", can pose a tough choice . . . Brooks answer was "Ours!" And it backed its decision with shrewd promotion that made its own name a winner

AS BRANDS sponsored by wholesalers and retailers continue to expand their market share, many a medium-sized packer is finding himself at the crossroads.

He's got to decide between "packing the privates" and "pushing our own."

Here, the experience of an Illinois company—Brooks Foods of Collinsville—is significant, since it's already faced the problem and successfully resolved it. In this case, management decided to emphasize its own label. And today that label is accounting for 90% of the firm's business.

Details of the company's promotion against strong regional and national competition point up the factors of putting one's own brand on the road and keeping it there.

Starting on a small scale in markets of the St. Louis and Southern Illinois area, Brooks advertised in local newspapers. Consistent use of small ads paid off, sales rose, distribution expanded. With this growth, merchandising got a bigger budget.

Then when competition pressed in, BF stepped up its advertising pace. In the metropolitan markets, it gave outdoor billboards a key role, on the premise that they reach the largest number of people on a cost-per-1,000 basis. At the same time, it themed the word "tangy" into its catsup promotions to accent the special characteristic of its product.

Posted in the St. Louis and Chicago markets, the first billboards sparked such an enthusiastic reception from food brokers, wholesale and retail people, and consumers that the company got a good idea of their potential in other markets. So today's program presents a most effective phalanx—billboards, newspaper ads, TV and radio spots.

Hand-in-glove with advertising is a merchandising program that goes clear down to the local food store. To put it over, the company foots a hefty outlay on retail-specialty work, store demonstrations, cooking schools, and sampling.

Brooks appears to be the only packer that samples catsup—a 2-oz.

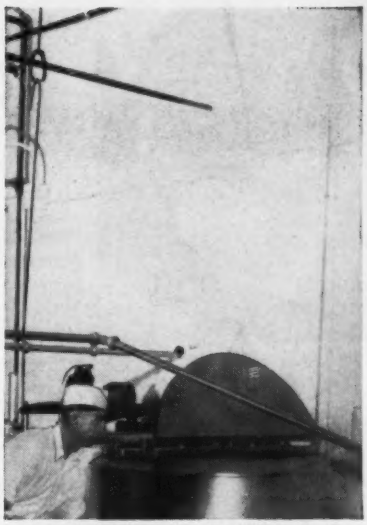
bottle being used by company salesmen. The technique has proved its value by getting numerous families that otherwise wouldn't try a new brand to "home-trial" the Brooks product.

Goes Big-Time

Brokers also receive sales help in the form of timely point-of-sales advertising, recipe folders, and other material. To illustrate: A catsup advertising-merchandising plan, set up in '52 under the guidance of the firm's advertising agency, was termed one of the largest and most unique promotions backing a single brand of catsup. Supporting the "Kettle-Fresh" theme was a complete promotional package, placed in over 50 markets.

This included: (1) Miniature kettles with "teaser" tag mailed to key merchandising men and store buyers; (2) full-page ads in a business journal announcing the promotion; (3) complete brochure with shelf talkers, bottle toppers, window posters, and cooperative ad mats; (4) unique 4-case kettle for dump displays in stores; (5) over 600 billboards in 25 markets with "Kettle-Fresh" design; (6) large-size newspaper ads in 25 markets repeating the "Kettle-Fresh" design; (7) an ad in a chain store magazine, and (8) radio spot announcements in select markets.

Results: More catsup was sold in 30-days than in any similar period in the company's history. —*FE Staff*



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MASTER MECHANICS

CURTAIN RAISER in San Francisco: Rep. Roosevelt swears in A. S. Vanderhurst, West Coast buyer for Grand Union, at opening hearings.

Congress Inquiry Spotlights

Roosevelt's industry probe warms up as "California Street" buyers take the stand . . . Demand for "flow-charts" of prices, quantities, and discounts promises to throw more light in murky buying areas

REP. JAMES ROOSEVELT (D., Calif.) brought his House Small Business Subcommittee to San Francisco last month (Oct. 8-9) and began preliminary hearings on distribution problems in the food industry.

This is the second of a series of scheduled hearings. The first was held in Washington, D. C., when this Subcommittee No. 5 heard representatives from all food-industry segments.

Although committee members professed to be neophytes in food distribution, their penetrating questions showed a surprising background —presaging more dynamite for this month's follow-up hearing in San Francisco.

Appearing to set the stage for what is to follow, the committee seemed intent on clarifying some of the intricate methods of food distribution.

These were in the areas of price fluctuations and their probable causes, buying allowances, set-aside and reservation buying methods, and the possibility of cooperation between buyers which might lead to conspiracy to control prices.

"In November", Mr. Roosevelt told FE during the hearing, "we will have a group of food canners, packers, and a number of growers, in addition to the return of the witnesses appearing at this hearing. Some of these have signified their willingness to appear—others we may have to subpoena."

Demanded by the subpoenas were buyers' records for the period 1957 to date in these four major categories or groups:

1) Management statements regarding buying policies or instructions to witness buyers.

Key Points of Buyers' Testimony

- **Set-aside or reservation buying agreements are "moral obligations."**

A seller is bound to set-aside specified blocks of merchandise, unless he is released from the agreement by the buyer. But, a buyer may, without notice to the seller, withhold shipping instructions if he finds this action advantageous. One buyer admitted the practice of duplication of set-aside quantities with more than one supplier—to assure supply.

- **Buyers sidestepped the snare of anti-trust violation by an unanimous agreement that there are no communications, whatsoever, between competitive buyers.**
- **Private label volume differs chain-to-chain.**

Safeway avoids disclosure of their dollar volume of private label purchases. A&P says its total purchases from San Francisco for fiscal year ending Mar. 1959 was $125 million. First National says only a small percent of its total purchases are of brand merchandise (National is for PL's). Ninety-nine percent of American Stores' purchases are for the chain's PL. Food Fair and Grand Union purchase only PL merchandise from their Western offices.

- **Promotional allowances offered.**

Safeway received occasional offer of promotional allowances for performance at retail level for PL items. Colonial gets a promotional allowance from packer for salmon put up under its PL.

- **Opening prices are meaningless.**

Within 48 hr. after these first prices are published, market quotes usually running lower by 2½¢ to 5¢ per doz., are announced to buyers by personal communication. These lower prices may be based on "early shipping instructions."

Subcommittee suspicions that some buyers may be "tricked" into purchasing at list price, prior to announcement of lower market price.

- **The pace is fast in food buying.**

What happened 60-90 days ago is, for some buyers, a closed book. More interesting—what will the market be tomorrow? . . . Buyers literally operate with hip-pocket records, and most transactions are by phone or teletype. Communications are filed for 60-90 days. And in some cases they're then destroyed.

- **Company buying policy, instructions to buyers are verbal—no written statements or instructions extant.**
- **Buyers were in agreement that their set-aside quantities never constituted a large percentage of any one canner's total pack.**

Thus, if they did not exercise the set-aside prerogative, canners' business would not be perilled.

- **Chain competition.**

Grand Union's new buyer was advised by headquarters to put his company operations on the same (buying) basis as A&P and other large chains.

- **Set-asides dominate.**

All buyers (witnesses) use set-aside or reservation agreements in their purchasing, except Consolidated Foods, whose buyer said they did not ask for set-asides. Instead, he said, most canners work on shipping schedule of 25% of his requirements (reservations) each quarter.

C. R. HAVIGHORST
Senior Associate Editor, "Food Engineering"

Concentration of Chain Buying Power

2) Correspondence relating to buying policies and methods.

3) Correspondence between buyers and sellers, and especially between buyers and 300 canners.

4. Records or evidence of communications between the witness and any other buyers.

Phonemanship Prevails

Questioning of witnesses soon disclosed that large buyers operate their offices on California Street with a bare minimum of records. Transactions between buyer and seller are made largely by telephone and teletype, with all local records being destroyed within 90 days.

Few transactions are confirmed by letter by the sellers. It was determined, however, that more complete records may be available from buyers' home offices.

In the solemn atmosphere of San Francisco's Federal Court, buyers played an unfamiliar role—for they were answering questions, instead of asking them. This surprise switch had an apparent debilitating effect on some unprepared or unwary witnesses. Others retained their usual outward aplomb.

Buyers gave negatively unanimous answers in the Group 1, 2, and 4 categories. In general, they operate their offices on the basis of purchasing the best quality merchandise at the lowest going market prices. And most answers in the Group 4 category were vehemently negative, with the explanation that at no time did the witness communicate with competitive buyers.

The Price Mystery

One of the most important decisions made by the Subcommittee resulted from this dearth of records and the general denial by all witnesses (at first) that they ever negotiated prices with sellers—fuel being added here by some witnesses' startling lack of economic knowledge as to causes of price changes.

Whether or not this was a smokescreen attempt to confuse the issue, the result was an explosive backfire which well may have far-reaching implications.

Witnesses had already testified that there was a price differential of 25¢ to 50¢ per doz., between private-label and branded-merchandise purchases. It was also established that Grand Union instructed its buyer to put his operations (purchases) on the same basis as other chains, after finding payments running 40¢ per case more for some items than paid by A&P.

Moreover, Harris Dodd, Colonial Stores, admitted that a salmon packer pays his company a promotional allowance for advertising salmon packed under the chain's private label.

Apparently confused by witnesses regarding their buying procedures in an industry where price competition is known to be keenest, Rep. Roosevelt then recalled William Corbus of A&P to the stand. As lead-off witness, Corbus had ranked A&P as one of the largest San Francisco buyers, with an annual purchasing volume (fiscal year ending Mar. 1959) of $125 million.

"It is unbelievable", the Congressman said, "yet each witness has made a point that at no time was there ever negotiations between buyer and seller on price."

The Cat's Out

"I cannot tell you," disclaimed Corbus, "that prices aren't negotiated. We discuss (with sellers) the market conditions and tell the canner what we think . . . but canners are free to name their own prices."

"Then we've been misled. There is a normal way to reach a price." And on this flat statement, Rep. Roosevelt, after conference with his committee members, announced that each of these witnesses will be required to provide special information.

In brief, the committee will assign specific items to each buyer, and he is to provide a purchasing "flow-chart", for the period 1957 to the present, which is to include: (1) Date when an item was purchased; (2) price; (3) quantity; (4) quantity discount or any allowance; and (5) company from which it was purchased.

If anyone had the misconception that this was to be a "circus", put on largely to aid the political ambitions of the subcommittee, the demand for these flow-charts, at least, will dispel the idea. For, the information contained in them will be easy to compare.

And, remember, Rep. Wright Patman (D., Tex.), of Robinson-Patman fame, is the chairman of this House Small Business Committee. This fact, to those who may have thrown some stones yet live in glass houses themselves, may present a new and possibly threatening picture.

One-Sided Set-Asides

In a concert of opinions, buyers hold set-aside and reservation buying agreements as "moral obligations". Some pointed out that, on a quarterly basis, they review with sellers the amount of merchandise withdrawn against these agreements.

If shipments do not equal 25% of the total agreement, or are more than this amount, the agreement is revised. If less than the 25%, the seller then must dispose of the surplus on the open market.

Set-asides and reservations (considered as identical types of agreements) are all made on the basis of "price when shipped."

Large buyers admitted that they frequently make set-aside agreements with as many as ten canners for such items as Cling peaches. However, they add that in such cases, each canner would reserve only one-tenth of their total requirements.

Togetherness

In these "closed buying-selling groups," business is done on a basis of mutual confidence and moral obligations. One buyer astonished the Subcommittee by insisting that he placed orders with suppliers without even asking about prices—he was sure they'd be competitive.

And, witnesses agreed that, in instances where several suppliers are used as a source for one item, they would not favor one over another with more shipping instructions just because of a lower price.

Yet there was some conflicting, if not contradictory, testimony. This buddy-buddy attitude disappeared, for example, after a seller's failure to keep his prices in line. Testimony disclosed that buyers would refuse to issue shipping orders to such a recalcitrant until he got his prices in line. —*End*

Chains fight back (see next page)➔

Chains Ready Counterattack

Retailers contend big-size distribution units are vital to industry expansion . . . Seek to offset critics with closer manufacturer, public ties

RESTRICTIVE legislation against large-scale retailers opens the door to increased government regulation of food manufacturing. Processors and distributors, with an equal stake in pushing consumer food expenditures to new records, shouldn't be sidetracked by the fuss over the private label-concentrated buying power axis.

That's the siren song you'll hear from chain operators in the months ahead. Reason: They're now convinced that the multi-pronged government offensive against bigness in food distribution—by four Congressional committees, FTC, and Justice Dept.—smacks of the early '30s when the then-developing chain groups were threatened by punitive tax schemes.

At that time, the National Assn. of Food Chains was formed to blunt the tax drive and build a favorable public image of the corporate retailers. How well NAFC succeeded, under the astute leadership of Pres. John Logan, is reflected by the strong power lever the chains hold in today's marketing and the extent to which consumers are switching to retailer-controlled brands.

Won't Play Dead

In a "roll up your sleeves" convention in Washington last month, NAFC carefully laid the groundwork for a four-front counterattack against critics, aiming at: (1) Opening up loopholes in FTC's economic inquiry, (2) forging closer supporting ties with manufacturers, (3) impressing upon retailers the need to keep trade practices within the law, and (4) outflanking legislators with a direct appeal to Mrs. Housewife that the chains have done right by her.

The tack that the giant distributors will take against FTC's economic reports was sketched by C. Stewart Sheppard, dean of Cornell U's business school, who was commissioned by NAFC to "analyze" the commission's interim study issued in June. Says he: "What the report reveals is interesting—what it conceals is vital."

Sheppard contends that FTC's inquiry rests on two basic assumptions "that still have to be validated." Namely, (1) That "giant corporations are acquiring greater wealth with a resultant concentration of economic power in 'monopolistic' hands." And (2) "that big business inevitably grows bigger, and that size is a function of evil serving to quash effective competition."

These assumptions, he reasons, ignore "the two most powerful factors in our economy—the effect of innovation (new processes, products, and methods), and the spirit of competition."

Looking to the future, the dean implies that investigations that assume "big business is bad business" could roadblock food-industry expansion. As he puts it: "Future growth and organization of population emphasizes the need for structural changes in distribution methods. This means inevitably an increase in the size of food distributing units. Mass markets can be served only by mass distribution.

"Bigness in manufacturing brings efficiency in high volume production with low unit costs and selling prices. Food distributors are only now seeking the various advantages of bigness that have been enjoyed by their industrial counterparts."

All Together Now

Emphasizing that the challenge of expansion confronts manufacturer and distributor alike, Logan pointedly reminded his audience that "per capita expenditures for food during the past 10 yr. are practically static, after adjustment for inflation." Increasing food sales in the decade ahead, he argued, will be more difficult because of stiffer competition from hard goods industries and the expected higher outlays that leisure-minded consumers will devote to services and recreation.

In view of this overall challenge, he asks: "Cannot our goals be accomplished far better by talking, planning, and working together to solve common problems—instead of sniping at each other, seeking preferential treatment or protective umbrella legislation, or punitive action against another segment?"

To make the chains' side of the story more convincing, NAFC is continuing educational efforts designed to build greater adherence to fair trade standards. FTC Chairman Earl W. Kintner underscored the gravity of the industry's situation by pointing out that 125 of the agency's current investigations concern food firms—including 16 against large chains. Also, 27 cases pertain to discriminatory allowances on food products.

Trimming the Sails

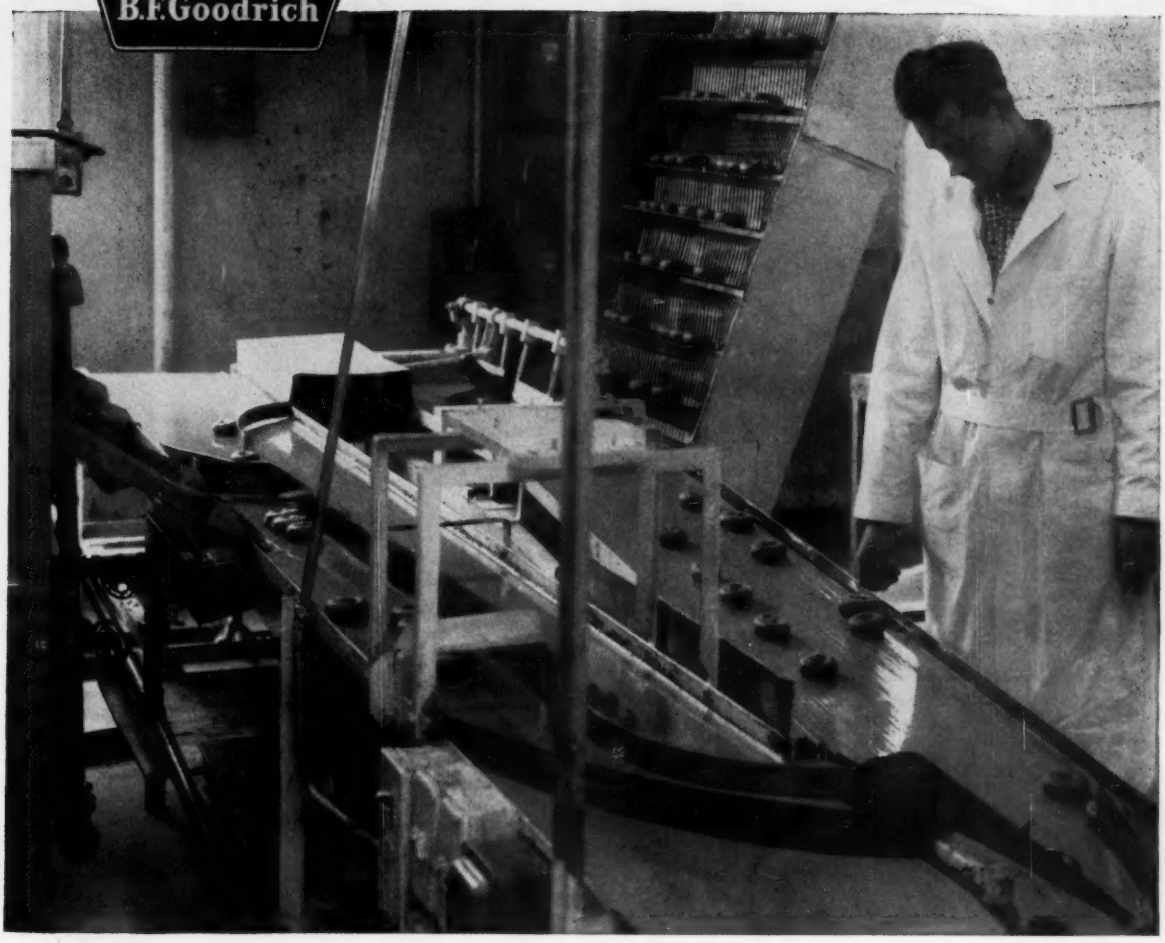
Aiming for more punch in its counterattack, NAFC has reorganized its own activities. For one thing, the joint manufacturer-distributor relations committee, set up with GMA, will be expanded by subcommittees dealing with specific commodity groups. Meat packers have already been sounded out on a proposed "meat relations committee" that would develop policy affecting processors, retailers, and producers.

A second move, aimed at sharper focusing of NAFC efforts, calls for greater concentration on government and public relations activities. More time will now be devoted by staff people to promoting two-way flow of information between government and food chains, coordinating distributor efforts at grass roots level, helping retailers prepare testimony before government bodies and, most importantly, getting the chains' side of the story across to the public.

As one speaker put it: "The final judge . . . in the highly competitive field of food distribution is not government, not the economist—it is the consumer." —*End*

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

B.F.Goodrich



Koroseal shrugs off hot fat, keeps doughnuts from cracking up

Out of a deep fat cooker and onto conveyor belts come thousands of doughnuts a day. But when regular belts were used here, there was nothing but trouble. Cooking oil from the hot doughnuts soaked into the belts, left stains, made them nearly impossible to clean. Some belts got soft and sticky, others hardened and cracked. None lasted more than a year.

Then a B.F.Goodrich distributor recommended an improved food-handling belt, made of Koroseal flexible material. This B.F.Goodrich belt defies the things that ruin other conveyor belts — warm cooking oil, grease, animal fats, most acids. Koroseal resists cracking and peeling, never gets soft and sticky. It has no odor, no taste, never gets rancid.

A Koroseal belt was tried. That was 2½ years ago. It worked so successfully that doughnuts now travel throughout the plant on Koroseal. The cost of belting and the maintenance of it is less than half what it used to be.

Its smooth, nonporous surface makes the Koroseal belt as easy to wipe clean as a dish. And it has solved the problem of doughnut breakage, too. When jam-ups occur, the Koroseal belt slides smoothly under the doughnuts without tearing them apart as other belts used to do.

Koroseal is typical of the belts developed by B.F.Goodrich for fast, clean handling of food products. If you would like to know more about these conveyor belts and exactly what they can do, ask a B.F.Goodrich distributor for a copy of the Conveyor Belt Selector booklet. Or write *B.F.Goodrich Industrial Products Co., Dept. M-738, Akron 18, O.*

Koroseal—T. M. Reg. U. S. Pat. Off.

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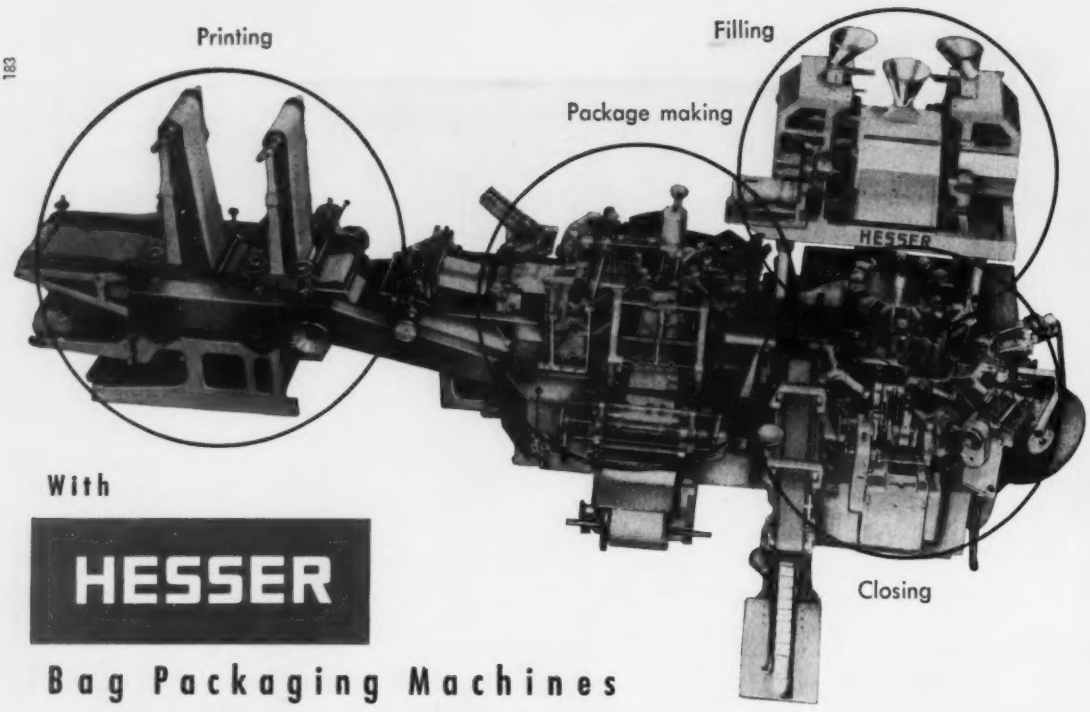
CIRCLE 49 ON READER SERVICE CARD

183



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Bag Packaging Machines

from the unprinted reel to the ready-made package - the most economical way of packaging.

Types of Bags: double walled bags and single walled bags

Making, filling, and closing of bag packages in one fully automatic operation,

the outer paper can be printed in the machine in up to 3 aniline colors or it can be fed from the pre-printed reel and registered by means of a photo-electric eye. The inner paper can be glued or heatsealed.

HESSER machines are equipped with **automatic double precision weighers** for products like sugar, rice, coffee beans, ground coffee, tea, oat flakes, macaroni products etc.

with adjustable **volumetric auger fillers** for products like flour, icing sugar, milk powder, cocoa powder, pudding powder, baby food, finely ground coffee etc.

with **volumetric plate type fillers** for products like salt, sugar, rice, small macaroni products, tea dust etc.

Machine Speed depending on size of package, and filling material, up to 80 packages per minute.

Floor Space: abt. 11½' by 19' (with printing attachment).

Personnel: 1 person for attending the machine,
1 person for taking the ready-made packages from the discharge.

Products a **high speed machine** is available with an operating speed of up to **200 bags per minute.**

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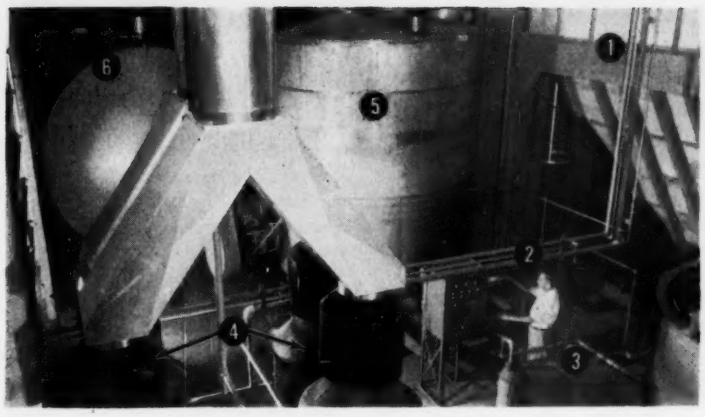


DECENTRALIZED PLANT'S facilities are all indoors, including two 100-ton storage bins. Of birch marine plywood, steel framed and supported, bins (1) resist condensate accumulation, cause of sugar caking. To make liquid sugar, operator sets weight on scale (2), then pushes buttons for sequential batching. Water from treating units (3) is pumped to heaters (4), then goes to 4,000-gal. stainless melt tank (5). Latter has 15-hp. side-entering mixer. Liquid sugar is stored in 25,000-gal. stainless tank (6).

1-Man Sugar-Service Plant

Single operator handles all in-and-out bulk granulated shipments, prepares liquid sugar at rate of 20,000 gal./8 hr. shift in Northwest's new pushbutton facility

TO UP AVAILABILITY of its sugar products in the Northwest, California & Hawaiian Sugar Corp. has put this new $1½ million facility on-stream in Portland. It supplements two liquid-sugar tank farms (Los Angeles and Seattle).

Increasing demand for bulk granulated sugar, liquid sugar, and "tailor-made" sweeteners had earlier sparked a new concept of decentralized distribution (FE Oct. '52, p. 71). Two new plants were built to serve this area with close-at-hand supplies.

For the average food plant, sugar deliveries from distant refineries aren't sufficiently "ready and direct." Convenient supply is called for.

An even more compelling reason, though, for building a decentralized distribution plant was disclosed by a C&H survey: It showed that the Northwest food industry is expanding rapidly, and its demand for sugar will double in the next 4 yr.

It was simple for C&H to design a one-man liquid melting station into this new bulk granulated storage plant. Here, the granulated is unloaded from RR cars and trans-shipments are handled at 30 tons/hr. Sugar is scaled by a 20-ton weigh-hopper unit and moves thence to bulk-granulated highway trucks. Liquid sugar is sped from storage by a 2½-in. pump.

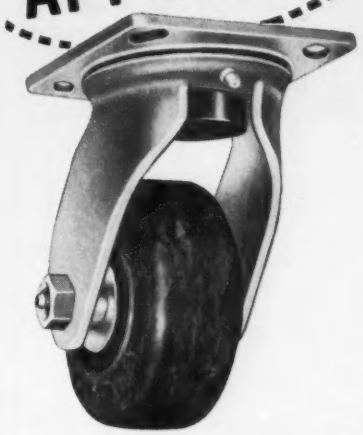
All process water is first treated by an Infilco (Model 1150, Type JBAS) system. This produces clear, pure water which imparts no color or flavor to the liquid sugar—of top importance where the products are confections and beverages.

Treated water is stored in a 2,000-gal. tank. It is drawn, on demand, through a stainless steel heating system (two Model 500-H Malsbarry heaters) and sent to the melt tank.

All liquid sugar tanks are equipped with ultraviolet lamps. In addition, the tank-transport trucks include Turco spray heads delivering at 190F. and 150 psi. for a cleansing action.

Through its automatic features, the plant produces liquid sugar to within $\pm\frac{1}{10}$ deg. of desired Brix and actually averages 66.5 deg. Brix. As an additional guard against caking, the facility has RH humidistat-controlled air conditioning.—*FE Staff*

APPROVED



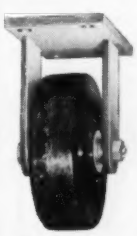
COMPLETELY SEALED
MAINTENANCE-FREE

SANITARY
CASTERS

Another *first* for better equipment sanitation! A complete line of sealed, sanitary casters in light, medium and heavy-duty models that comply . . . and surpass even the most rigid sanitation standards.

New in design, with special construction-convenience features that make sanitary maintenance simple and easy; plus the fact that they outlast regular casters many times over.

Immediately available in a broad range of floor-protective swivel and rigid models in 4", 5" and 6" wheel diameters, 400 to 1200 pound capacities.



Molded Texite Wheels . . . were selected for use on these sanitary casters because they offer better floor protection, equal semi-steel wheels in load-handling abilities, are easily cleaned, shock resistant and impervious to most industrial chemicals, acids, etc.

Write Today... for additional information, specifications, prices on these modern sanitary casters.

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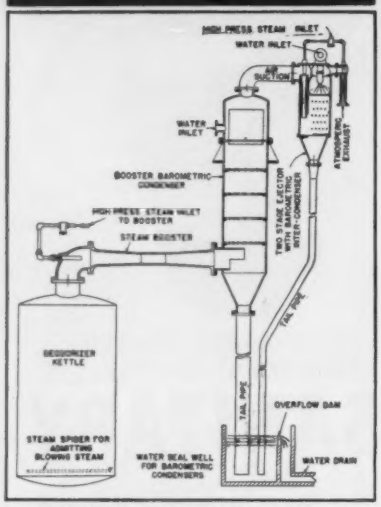
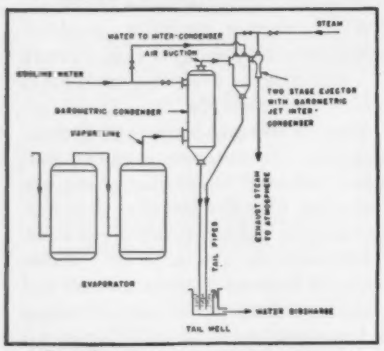
ALBION INDUSTRIES, INC.
Distributors in Every Strategic City
Main Plant
ALBION, MICHIGAN

Here's how to get high vacuum at lower cost... from

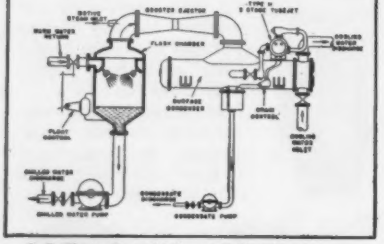
C. H. WHEELER



In Deodorizing Operations—C.H. Wheeler Tubejet® Booster with Barometric Condenser, and 2-stage Tubejet with Wheeler Barometric Inter-Condenser, produce high deodorizer vacuum. No moving parts means less Tubejet maintenance.



In Evaporation, Tubejet Ejector works with Wheeler Barometric Condenser to produce high vacuum. Initial cost of Ejector is low installation easy because of lightness, simple connections.



C. H. Wheeler Steam Jet Vacuum Refrigeration is used extensively in producing cold process water for food and chemical plants. Where there is an abundance of steam at low pressure and cooling water for the condensers, this is an ideal way to produce chilled water at low cost, with trouble-free equipment.

FREE! 35-page Catalog 1462.

Process Equipment Division

C. H. WHEELER MFG. CO.

19th and Lehigh Avenue, Philadelphia 32, Pa.

Which Package Size Is Best for Us?

From files of *National Consumer Panel of Market Research Corp. of America* . . . Material is factually correct. Identities of products and companies have been masked to insure anonymity—The Editors*

MARKETING CASE HISTORY OF MONTH

Management's problem

WE ARE a leading brand in a highly competitive product field.

To reduce the number of opportunities for brand switching by users of our product, and to attain a sales advantage over our chief competitor, we introduced a giant-size package. Our principal rival soon countered with a package even larger than the one we had brought out.

At the end of the first year of promotion, sales of our new giant-size container, as compared to those of our competitor's new package, were approximately proportional to the total sales of each brand.

To help us assign promotion budgets for the coming year, as well as enable us to formulate future marketing strategy, we have to know if our share-of-market in the giant size will increase, decrease, or remain the same.

We therefore need an accurate estimate of the rate of growth for our large package, and for our competitor's, in order to determine the position of each a year from now.

WHAT WOULD YOU DO?

Management's decision

We ordered a special analysis of the purchase records of families in the National Consumer Panel to determine:

1. Number of new buyers and the rate of new-buyer attraction for each product.
2. Percentage of repeat buyers for each.
3. Interval between purchases by repeat buyers.

From this information, appropriate "values" were assigned to new buyers and to the one-, two-, and three-or-more-time repeat buyers.

Result of action

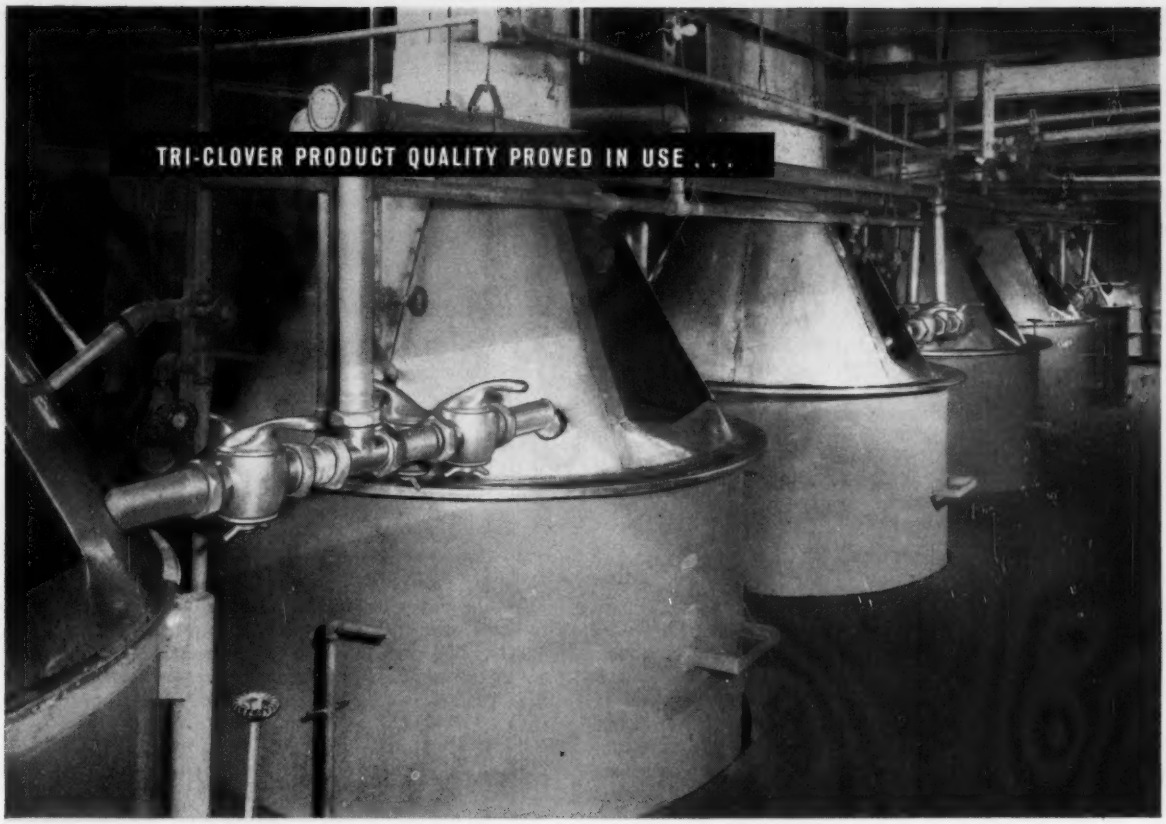
After new and repeat purchasing was thus given its indicated weight in the total sales picture, it was possible to predict the rate of growth for each product and the relative competitive position in one year's time.

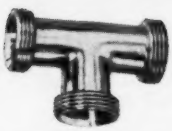
The study revealed that our competitor's new package had a higher percentage of customers at each level of repeating, and that the interval between purchases was shorter. In one year's time our product's sales growth in relation to present volume would be at one-half the rate of the competing product's growth.

In short, the competitive advantage we sought would not be realized with our present type of marketing activity.

We decided that extra effort on behalf of the new size would be too costly in view of our competitor's greater success in winning repeat customers for his large package. By putting more effort behind our other sizes during the coming year, we felt we would make the most effective use of our marketing resources.

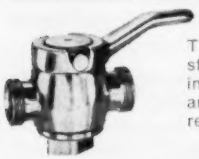
* For more information, write to FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.



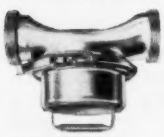


Tri-Clover stainless steel "standard" sanitary threaded fittings with bevel seat construction.

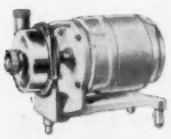
Tri-Clover Tri-Clamp fittings offer quick easy assembly and disassembly; long trouble-free fitting life.



Tri-Clover stainless steel valves are made in a full range of types and sizes to meet every requirement.



Tri-Clover full-flow magnetic traps employ an Alnico magnet to assure maximum removal of tramp metal.



Tri-Clover centrifugal pumps are fabricated of highest quality corrosion-resistant metals for efficient long-term service.

Series of Tri-Clover Valves serve HUNT FOODS Plant for almost 20 years

The "battery" of Tri-Clover stainless steel valves shown above are being used in the Hunt Foods, Inc. plant at Fullerton, California, in an atmospheric evaporator process for producing the well-known Hunt's tomato sauce. An "ordinary" installation, perhaps, except that *these same Tri-Clover valves have been giving reliable, trouble-free service in this plant for almost twenty years!*

Here is an outstanding example of the high quality material and workmanship that's "built-in" to the complete line of Tri-Clover stainless steel fittings, valves, pumps and tubing.

Why not let Tri-Clover quality products help to achieve new standards of efficiency and sanitation in *your* processing operations? Let our engineering staff help in solving your specific corrosion-resistant liquid or semi-solid conveying line problems.

See your nearest Tri-Clover Distributor.

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LADISH CO.

Tri-Clover Division

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S-659

IN CANADA: Brantford, Ontario

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MARKETING SIGNALS

Tracking New Product Ideas

Salesmen and sales reports are rated as the best source for new product ideas, according to a survey of 252 firms by American Management Assn.

Other top-rated sources, in order of preference, are: Research and engineering staffs, customer comments, market research department, and analysis of competitors' successes and failures.

A growing trend toward placing responsibility for new product planning at the general management level was indicated. In 61% of the responding firms, product planners report to either the president, general manager, or executive vice-president.

GF's Newest—A Cookbook

Latest step in General Foods' program to give its Kitchen Dept. a wider marketing role (see FE Dec'58, p.44) is publication of an attractive 448-page cookbook. Although some 4,000 different books of this kind have been published by others since '43, the firm says its entry is the first to be arranged by meal situation.

V.-P. Ellen-Ann Dunham, who directed the combined efforts of 130 home economists, food technicians, professional writers, and homemakers, sees the literary venture as "a major step in establishing the identity of GF's Kitchens as a friendly group of experienced women serving homemakers."

Merchandising support for the book will be as hard-hitting as that which backs the firm's food products. A $2 million promotion budget that began last Spring involves 20 million direct mail pieces, plus a full-scale advertising blast that will reach an estimated 40 million families via print media.

Plus-Sales Through P-O-P

Unplanned purchases are better stimulated by point-of-sale displays than by special price cuts, asserts the Point-of-Purchase Advertising Institute. Basis for this contention is a depth study of 300 consumers in Louisville this summer.

Impulse purchases accounted for 34% of food store sales during test period. Twenty-seven percent of unplanned buying took place when no sales aids were present, 38% when p-o-p was used, and 35% when price cuts were offered.

In-store setups were most effective for bakery products, canned goods, cereals, dairy items, and staples. Price sales had extra appeal for frozens and coffee.

Gambles On Trend-Bucking

Beverage firms, heavy TV spenders, favor local cut-ins or spots as a rule. Canada Dry, however, is betting on an opposite course—and backing it with a $2 million budget in national network TV.

V.P.-Marketing W. S. Brown feels the venture will solidify company's new image as the "first family of beverages." CD, as a result of 4-yr. expansion program, now offers 72 products in up to 6 different package sizes, all distributed through 186 cities.

National network won't hurt the company's effort to capitalize on local drink preferences, he says. This problem will be handled by use of local cut-ins.

Who Bought Whom?

A new report by USDA's marketing research division traces the merger pattern in the food industry between '52 and '58. A total of 1,537 acquisitions were reported by 1,071 companies in that period.

Grocery stores accounted for 37% of the mergers; dairy processors, 24%; other type food stores, 10%; wholesalers, 9%; farm assemblers, 7%; bakers, 7%; canners, preservers, and freezers, 3%; and vegetable and animal oil processors, 3%.

As can be expected, large companies dominated the corporate changes. Firms with 500 or more employees made the following proportion of acquisitions for their industry segments: Dairy, 67%; canning, preserving, and freezing, 56%; bakery, 81%; vegetable and animal oil processing, 87%; wholesalers, 4%; farm assemblers, 2%; grocery stores, 28%; and other food stores, less than 1%.

BRIEFS

Soft drink firms pushing overseas sales. Coca-Cola is opening three new plants a month abroad.

First use of video tape for filming TV station identifications claimed by Jacob Ruppert. Brewer says tape permits faster revisions than motion picture film, gives flexibility in placing spot announcements.

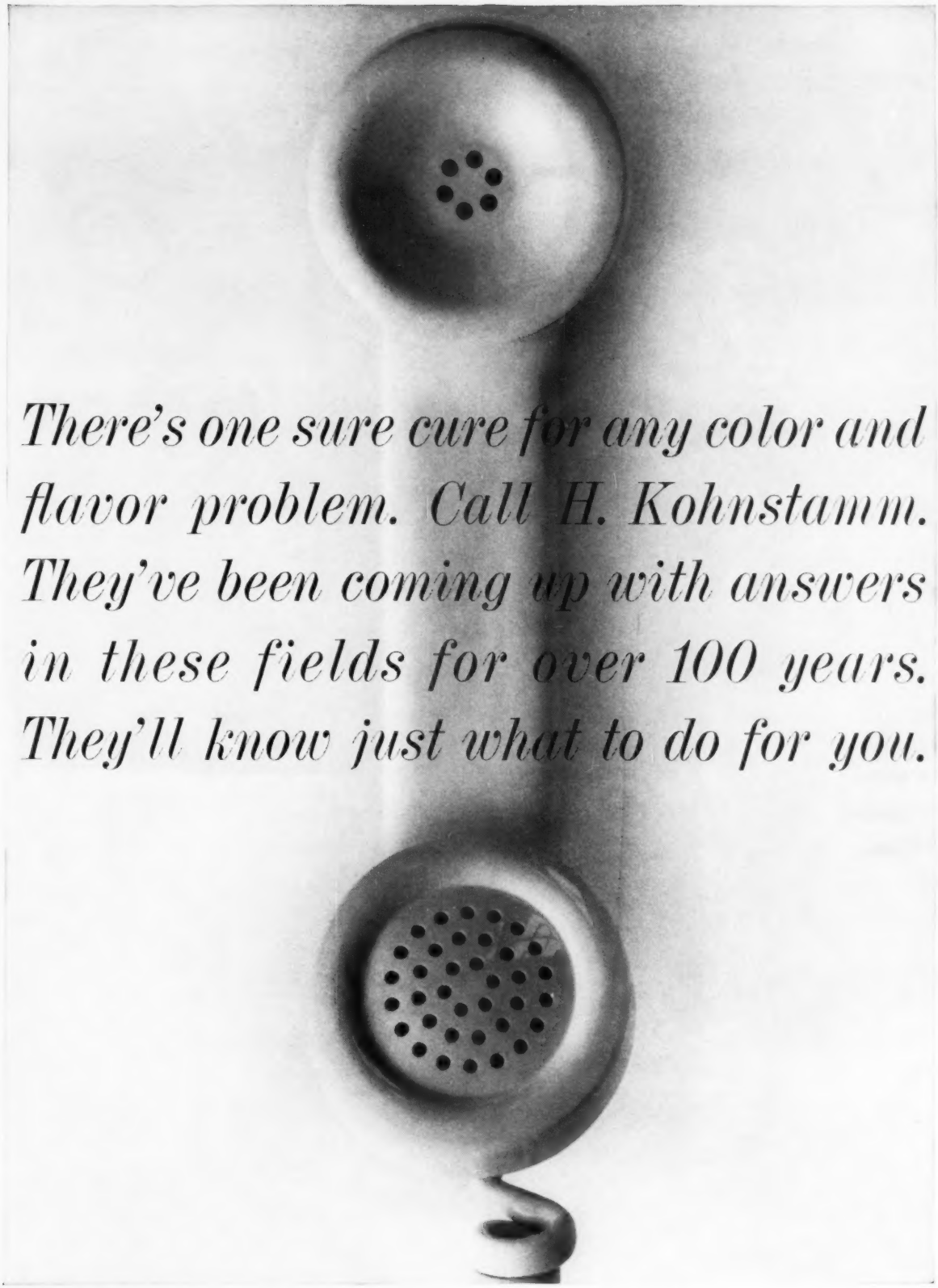
Recipes in food ads are still effective despite popularity of time-saving items, reports "Ladies Home Journal." Check of 250 4-color ads found recipe displays rating 12% more interest than the recipe-less product illustration type, and 42% more awareness than displays without recipes or illustrations.

Unusual sampling campaign by Milady Foods features names taken at random from telephone directories and listed in newspaper ads. Coupon for free package of company's frozen blintzes is given to recipient.

Marketers are revising their Southern organizations to better exploit area's growing potential. International Salt is replacing scattered small branches with fewer and larger centrally-located offices. And Anheuser-Busch plans $5 million expansion for Tampa brewery opened less than a year ago.

More detailed consumption information is being turned out by researchers. Here are a few nuggets: Around 300 million pumpkin pies will be eaten during Thanksgiving and Christmas holidays. . . "Take-out" foods at chop suey restaurants aggregate $70 million. . . Sales of GF's "Tang" (powdered orange drink) from Nov. '58 to Aug. '59, on a reconstituted equivalent gallonage basis, practically equalled chilled orange juice purchases, and trailed canned orange juice volume only slightly.

Advice on institutional selling is contained in new bulletin to be issued on regular basis by National Canners Assn.


There's one sure cure for any color and flavor problem. Call H. Kohnstamm. They've been coming up with answers in these fields for over 100 years. They'll know just what to do for you.

First producers of certified colors **H. KOHNSTAMM & COMPANY, INC.** Established 1851
161 Avenue of the Americas, New York 13, WAtkins 9-7000 / 11-13 E. Illinois St., Chicago 11, SUperior 7-6174
2632 E. 54 St., Huntington Pk., Calif., LUdlow 5-1226 / in other cities consult the "Yellow Pages"

What you should know about

Is your box a delivery boy

There's a whale of a difference. It usually shows up on the sales charts.

Did you know, for example, that some products' sales have increased substantially *after* their containers were redesigned *visually?* And consider this: A single corrugated box, in an average service lifetime, can meet and influence hundreds of people. Since you've paid for this valuable display space, why not make the most of it?

Plant . . . to point-of-purchase

Colorfully printed corrugated boxes work hard for you in dozens of ways. You can use them to promote your brand name—create a "personality" for your product—add point-of-sale impact. Your designs can tie in with special and seasonal promotions and events —or your advertising. They can help develop dealer preference by speeding identification, simplifying inventory control. Even on factory warehouse shelves good-looking boxes do an important in-plant merchandising job.

Choosing the design

The type of design and color to use will be governed by the specific marketing needs and the product itself. Is it an industrial . . . a staple . . . a luxury? Should the mood be

design and printing of Union boxes

...or a traveling salesman?

gay . . . warm . . . dignified? Is it desirable that the design be adaptable to family packaging?

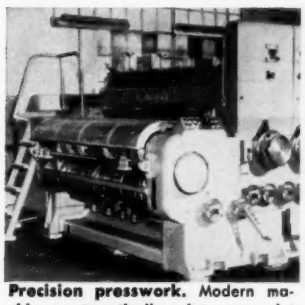
Union's Package Design Department will be glad to analyze each of these factors for you, help you take maximum advantage of the many merchandising opportunities your container offers.

Making the right impression

How well your box design succeeds as a salesman depends largely on how it is reproduced. And printing on corrugated is an exacting science. Roll pressures, for example, must be light enough not to damage or weaken corrugations...yet heavy enough to insure clear, crisp impressions that will stand up (and stand out) even under the severest handling and shipping hazards.

The tools for the job are critical too. Today, flexible printing plates have been perfected so that they can be tailored to the specific job to be done. There are new moisture-set and oil-base inks to choose from as well as new precision machines for the actual printing. When these developments are teamed with the bright, smooth surface of Union containerboard the result is a corrugated box that gives you the best in protection for your products and merchandising for your brand.

Ask to see samples of what has and what can be done. Union's artists and pressmen have produced outstanding designs for some of the country's largest and most discriminating box users. Their services and talents are at your disposal.



Precision presswork. Modern machines automatically print, score, slot and stack box blanks — in one fast operation.

Hardworking designs quickly identify contents including brand, size, count, code number.

An experienced art staff is at your service. Specially trained to get the most out of corrugated printing, they can help you achieve maximum merchandising impact with your box.

Write for new informative booklet, "Printing of Corrugated Boxes."

union camp

UNION BOXES

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

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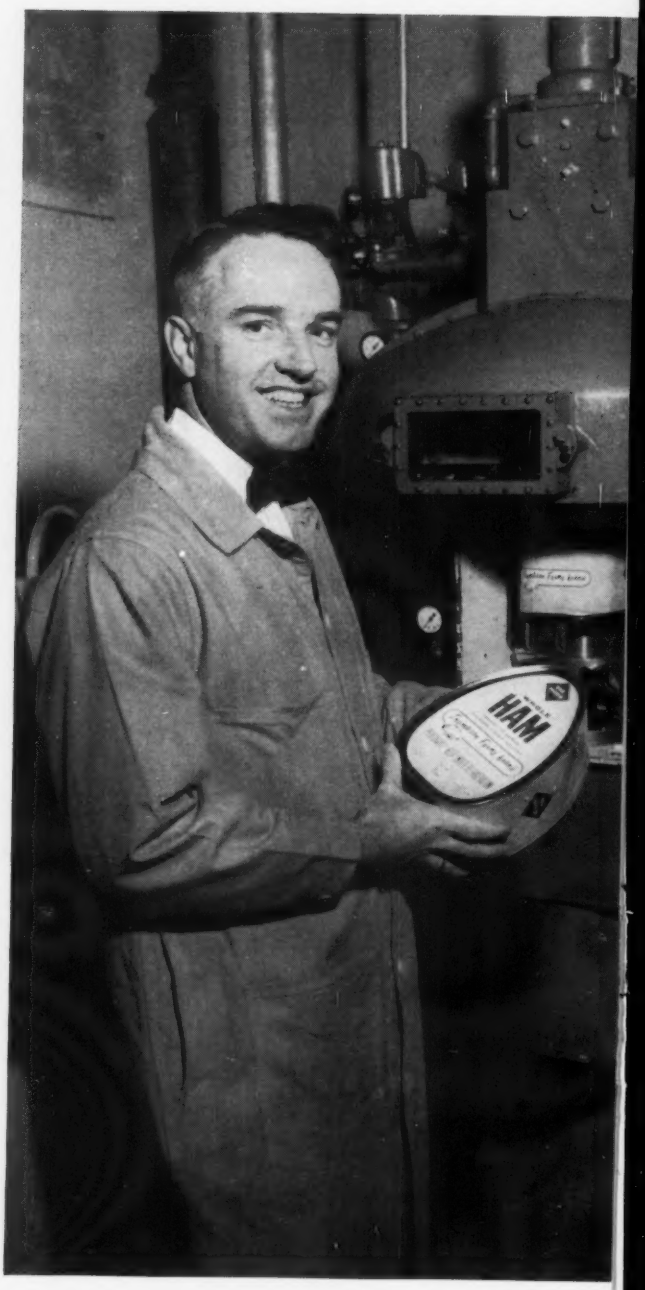
Sales Offices: *Eastern Division — 1400 E. State Street, Trenton, N.J.*
Southern Division — P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division — 4545 W. Palmer, Chicago, Ill.

Which twin is



the Thompson?

Which one is the food technologist? Which is the marketing expert?

Answer: One and the same. John E. Thompson, President of Chicago's Reliable Packing Co., dynamic independent packer. John E. Thompson, ingenious innovator in processing, packaging and marketing of pork products.

For instance? Take Thompson Farms Bacon, a lean, high quality product. And "Easy-Carve" brand ham that retains its ham-like shape even though boneless.

What about his technical achievements? Right in front of John Thompson's desk . . . his pet electronic control system that records the operations of every piece of major equipment in the plant. Or consider his successful work in behalf of electrical hog stunning (humane slaughter). Or his early installation of continuous lard rendering.

One of the most satisfying things about this market is that you find "whole men" like John Thompson almost anywhere . . . in every branch of the business, in plants modest or mighty, and at all management levels. All you have to do is go where each copy of FOOD Engineering goes . . . for remember, it's *the complete magazine for the whole man.*

Wouldn't you like to have these "whole men" reading your advertising?

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Pet Dairy

Wm. C. Durkee
Marketing V.P.
Pepsi-Cola

M. Asproyerakas
V.P.-Chief Engr.
National Baking

Jeno Paulucci
President
Chun King

Dr. J. B. Rehm
Dir. Research
Heublein

Wm. L. Clark
Dir. Engrg.
Calpak

FOOD ENGINEERING

For Better Management in Manufacturing, Packaging and Marketing

A McGraw-Hill Publication, 330 W. 42d St., New York 36, N. Y.

ABC ABP

AT 2,000 a MINUTE, cans are fed to elevators by semi-automatic depalletizers (Canco) equipped with dual waterfalls. Handy to units (rear) is large store of bulk palletized cans.

Striking Step-Up in Can Handling

"Missing mechanization" is now supplied by versatile new line of can depalletizers . . . Costs slashed, uniform flow to filling stations assured

TRUE, food plants have long handled cans mechanically. But an important step generally omitted in this mechanization has been the can in-feed, which has tended to remain a manual operation.

With the large volume of cans used by most canneries, this routine has required relatively large crews—to unload cans from carriers and place them in can-runs. Moreover, among other problems it prohibited the efficient in-plant storage of cans, contributed to can damage, and exposed cans to dust, dirt, and insects.

But now, bulk palletization is providing an efficient method for handling vertically stacked layers of empty containers.

Gerber Products Co., Oakland, Calif., one of the first to install this system, utilizes five Canco depalletizers to handle 2½ million and more cans daily with these impressive advantages:

- **Greatly speeds in-feed (up to 2,000 cans/min. per depalletizer).**
- **Utilizes manpower more efficiently (saves ¾ labor formerly required for manual in-feed).**
- **Levels-off line production speeds by maintaining a constant, even flow of cans to fillers.**
- **Permits large volume handling and storage of cans in comparatively few packages.**
- **Makes for easy fork-truck handling.**
- **Gives cans better protection from both damage and dirt.**

A smooth flow of cans, from manufacturer to cannery, is achieved by this system. At the can plant, pallet loads, tiered two high, are loaded by fork-truck onto four sets of roller conveyors fixed on the floor of a truck-trailer.

Spotlight on Routine

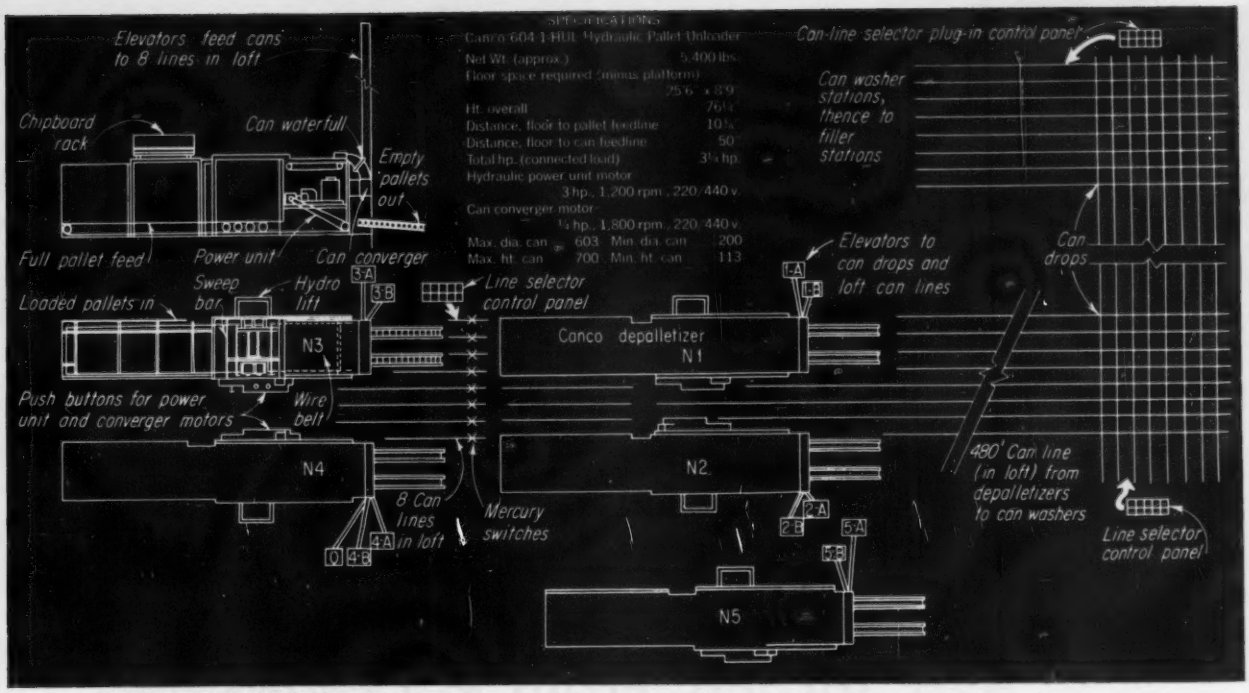
At Gerber's this load is rolled onto two powered belts, which move the pallets onto two gravity roller conveyors that accommodate a truck-load. In-feed belts are on a hinged frame, may be raised to clear dock for other traffic.

To assure an adequate supply of cans, Gerber has allotted warehouse space, adjacent to the depalletizers, for 50 million cans. From the receiving conveyors, fork-trucks store pallet loads (tiered four high) according to can size, enamel, and lithographed labels. The same fork-truck is used to feed pallet loads to the depalletizers.

With the exception of the No. 4 unit, the five depalletizers are equipped with dual can-waterfalls, each of which serves its individual can elevator. No. 4 has a third can-discharge.

The total volume of cans from a unit may be routed to its two elevators. Or, by placing a diversion plate across the mouth of one waterfall, the flow is limited

C. R. HAVIGHORST, Senior Associate Editor, "Food Engineering"


Elevators feed cans to 8 lines in loft
Chipboard rack
Can waterfall
Empty pallets out
Full pallet feed
Power unit
Can converger
Sweep bar
Hydro lift
Loaded pallets in
Push buttons for power unit and converger motors
Wire belt
N3
N4
N2
N1
N5
Canco depalletizer
Line selector control panel
8 Can lines in loft
Mercury switches
Can-line selector plug-in control panel
Can washer stations, thence to filler stations
Elevators to can drops and loft can lines
Can drops
480' Can line (in loft) from depalletizers to can washers
Line selector control panel
SPECIFICATIONS
Canco 604 1-HUL Hydraulic Pallet Unloader
Net Wt. (approx.) 5,400 lbs.
Floor space required (minus platform) 25'6" x 8'9"
Ht. overall 76½"
Distance, floor to pallet feedline 10½"
Distance, floor to can feedline 50"
Total hp. (connected load) 3¾ hp.
Hydraulic power unit motor 3 hp., 1,200 rpm., 220/440 v.
Can converger motor ¾ hp., 1,800 rpm., 220/440 v.
Max. dia. can 603 Min. dia. can 200
Max. ht. can 700 Min. ht. can 113

DOWN TO DETAILS: Flow of cans over any of 8 Gerber runs is bushbutton-controlled by product-filler operators. Keying action are 3 plug-in control panels. Each depalletizer may handle 5 different types of cans.

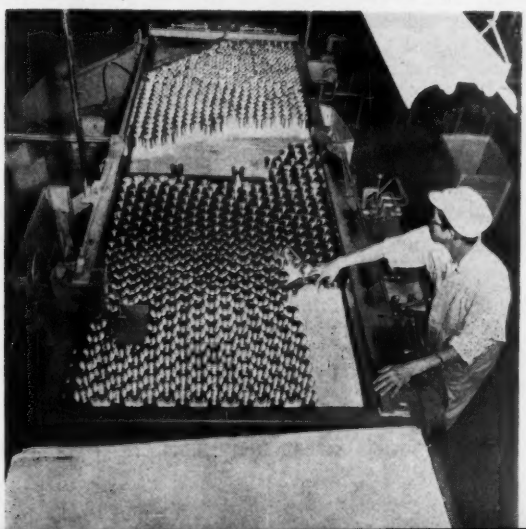
to one waterfall, about one-half the maximum delivery volume of the unit.

During a packing season, Gerber uses 16 different types of cans. There are 3 different sizes of cans, some enameled, others plain, still others lithographed with the company label. Designed for flexibility, the system simultaneously handles 5 different types of containers, and these are routed (by plug-in controls) over 8 can lines to product fillers.

Filler operators control the flow of cans to their units by pushbutton. When the flow is stopped in a line, input from its depalletizer continues until the line fills up to its elevator can-drop. At this point the cans close a switch that automatically stops the depalletizer's take-away wire belt until the operator again actuates the line.

Operating this station are 8 men, including the fork-truck operator, a relief man, and empty-can foreman.

ACTION CLOSEUP: Sweep bar moves cans from chipboard separator to wire belt, which in turn feeds them to can waterfall (rear). On left is control that levels can layers.



Depalletizer Details

Three types of depalletizers—manual, semi-automatic, and automatic—have been developed by American Can Co. Gerber uses the semi-automatic.

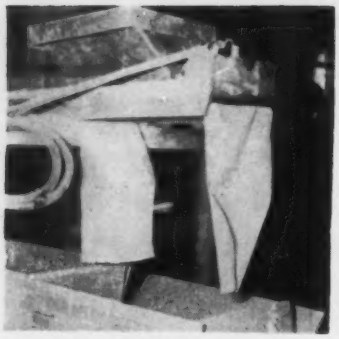
The manual unit (capacity 150-800 cans/min. according to can size) is offered for medium-speed operations. The automatic, largely used by brewers, has a maximum capacity of 1,600 can/min., requires no operator other than the fork-truck driver.

Except for the can-converger motor, all power used by this Canco unit is hydraulic (700 psi.), developed by a 3-hp. motor.

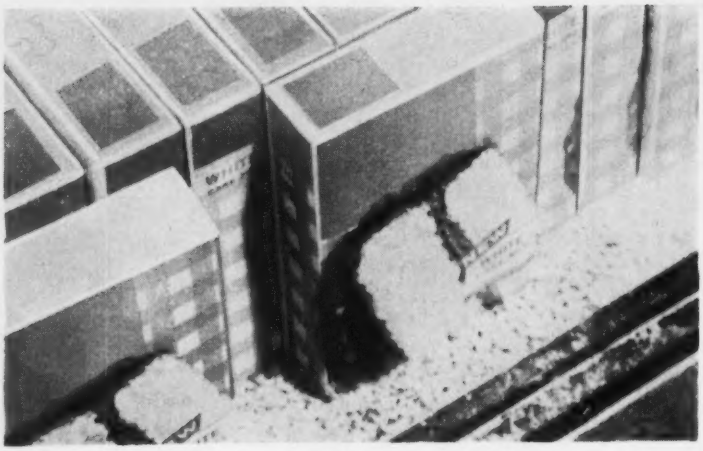
The intake conveyor has space for two full pallets in addition to the one being unloaded. On the same chain conveyor that feeds loaded pallets to the elevator, empty pallets are moved to the discharge roller conveyor, where they are picked up by the fork-truck.

By pushbutton, the operator elevates the load. The top layer of cans strikes a control plate, which stops it level with the take-away wire belt. Then with another button, the operator actuates a bar that sweeps the entire layer of cans from the chipboard separator onto the take-away belt.

This cycle is repeated until the pallet is empty, whereupon he lowers the empty pallet and, by pushbutton, discharges it, then positions another loaded pallet on the elevator. —*End*



SIMPLE UNIT comprising hopper with tripping mechanism (actuated by filled cases on way to sealer), dumps minute quantity of dust on top of packages.



TREATED PACKAGES repel insects even after removal from shipping container. While bugs swarm over floor of infested incubator (foreground) they show no inclination to crawl onto cartons from dusted case.

Bars Insects From Packages

New repellent dust is added to shipping container before sealing, keeps packeted foods free of infestation during distribution

HIGHLY SIGNIFICANT to processors of packaged foods is a recent development for controlling insect infestation during all movements from plant to consumer.

Employed is a repellent dust containing a small amount of insecticide. It's added to filled shipping containers just before sealing. And subsequent handling distributes it throughout interior of case and on walls of food packages themselves.

▶ Product is inexpensive, simple to apply, and phenomenally successful in repelling insects. In addition, it's completely innocuous from the toxicity or the contamination standpoint.

Focus on Packaging Problems

Processors of such products as macaroni, noodles, cereals, prepared mixes, candy, dates, raisins, cookies, nuts, and other packaged foods, are recipients of numerous excited complaints that their goods are "infested with bugs." Naturally, the groceryman, broker, or warehouseman insists on returning such contaminated materials. And in the interest of good customer relations, the processors usually accommodate them. The product is either destroyed or diverted to animal feed—resulting in appreciable losses.

In some instances, the insects entered in the processing plant itself. All too often, however, they originate in infested warehouses, railroad cars, or grocer's storage rooms. Or they transfer from other contaminated goods.

To circumvent such unhappy occurrences, processors employ many types of special wrapping materials, protective packages, special sealing, etc. These special precautions frequently add significantly to cost of the food product.

In addition, they have attempted to educate the handling or selling agencies in proper basic sanitation practices—how to maintain warehouses free of insects, how to treat boxcars against insect transmission, how to rotate stocks, and protect shelves and cabinets from insect build-up. Nevertheless, there is still a heavy traffic in return of insect-infested goods to processing plants.

In practice, packaged foods in cellophane bags, cardboard cartons, or similar containers, are placed in corrugated cases, which are then sealed and introduced into shipping channels. Pests such as Confused Flour Beetles, Saw Tooth Grain Beetles, the Dermestid family, including Cabinet and Carpet Beetles, etc., are attracted to such cases.

Then Comes Contamination

Some actually chew through the cardboard. Others that lack chewing or boring apparatus slip through openings into the cartons. Once inside, they contaminate the food, either by boring through the package itself or finding a weakness or aperture in the package's normal construction.

Then they begin breeding, casting their skins, depositing their excreta throughout the interior. And in time this evidence becomes readily discernible to anyone handling the packages.

Believing that control of this infestation could best be accomplished

T. L. HUGE
President, The Huge Co., and The American Sanitation Institute, St. Louis

by the processor, we set out to develop a special insect repellent and method of applying it to the inside of shipping cases.

In formulating the product, we spotlighted these seven objectives: The repellent must—

1. Remain effective for at least 6 months, even when used in infinitesimal dosages.
2. Comprise safe materials that won't, in case of contact, contaminate the foodstuffs.
3. Be relatively inexpensive, thus fostering large-scale use.
4. Be easily applied on fast production lines.
5. Not detract from the attractiveness of the food package.
6. Not impart offensive odors, or create dust conditions objectionable to the production workers.
7. Serve basically as a repellent, but would actually kill any insects.

Following extensive laboratory and field tests, we hit on a most effective material—one that not only meets the above strict specifications, but actually exceeds them.

Known as Excelcide Bug-E-Vict, the product is a ready-to-use dust formulation about as fine as talcum powder. It serves not only as an insect killer but, more important, as a barrier insects will not penetrate.

In our laboratory, we placed treated and untreated shipping cases filled with various type food products in incubators containing literally hundreds of thousands of live larvae and adult Cadelles, Saw Tooth Grain Beetles, Indiana Meal Moths, Dermestids, and Confused Flour Beetles. Soon, each case became almost covered with the insects.

But whereas they readily entered the untreated cases, they seemed to have no desire to enter the repellent-treated ones.

These cases were subjected to the heavy insect populations for 4-6 months, then removed from the incubator, opened, and the results tabulated. By that time, thousands of insects were inside the untreated (control) shipping cases, plus additional hordes that had entered the food packages themselves. By sifting contents of a 3-lb. bag of buttermilk pancake mix, for example, we found 300-400 live insects!

But no insects were sifted from a duplicate bag taken from a repellent-treated case.

In the early development stages, we were concerned about the possibility of the repellent being introduced into the shipping cases in excessive amounts, thus causing the packages to have a dusty appearance. So we experimented to determine the optimum amounts. We found that 200 mg. was almost 100% effective, and that 100 mg. was 90.95% so.

It was also discovered that in the case of bagged products there was a tendency for the food to leak or sift out of the packages and dilute our repellent. So we decided to play it safe by recommending addition of ½ teaspoonful (200-300 mg.) to 1 or 1½-cu.ft. shipping cases.

Cost of using repellent is figured to vary between 1/20¢ per shipping case to as low as 1/20¢, depending on quantities purchased.

Cost of mechanism to apply the dust need not exceed $100, and can be fabricated by the plant mechanic. Only a simple hopper with tripping mechanism is involved. When case is conveyed underneath, desired quantity of dust is dumped directly onto the packages just before flaps are closed and sealed.

Basically, the repellent never touches the product, since it is dumped only into cases holding packaged food. There is, of course, the danger that some of the packages (particularly those that are film- or paper-wrapped) will become torn or damaged, permitting a little of the dust to contact the food.

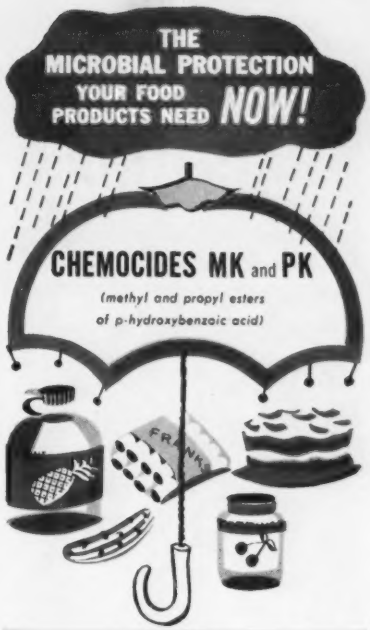
Fortunately, the pyrethrin insecticide used is among the safest to mankind and can be generally considered innocuous. And since only a tiny proportion of this dust is insecticidal, danger of contamination or toxicity is, to say the least, exceedingly remote. —*End*

Takes Exception To Infra-Red Statements

The article, "Striking Advances in 'On the Line' Moisture Control" (FE Aug., p. 82) states that "Older units usually use glass infra-red lamps, while newer ones utilize metallic infra-red elements."

This statement seems almost incredible. . . Previous articles which you have published have indicated the effectiveness of T-3 quartz lamps in the food field.

There are some food processing applications where the 'far' infra-red heaters have shown some advantage. However, 'near' infra-red heat sources provide more penetration. The statement, "Metallic units, however, emit large amounts of 'far' infra-red, which is almost completely absorbed by sample to permit more rapid, more uniform drying," is erroneous.—*Paul Krupp, Manager, Infra-red Marketing, Fostoria Pressed Steel Corp., Fostoria, Ohio.*



Accepted as safe—
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Effective in acid, neutral and alkaline pH ranges

More active against molds, yeast and bacteria

In addition to inhibitory action—can be bactericidal and fungicidal

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THE strength and durability of La Porte Galvanized Steel Conveyor Belts pay off in improved performance and lower maintenance cost. The flexible open-mesh design assures a positive drive on the La Porte Sprocket, allows the free circulation of air and liquids around products in process, also makes these belts easy to shorten, lengthen, repair, or sterilize without removal from the sprocket. In addition, the hard galvanized surface resists oils, acids, detergents, grease and corrosion.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

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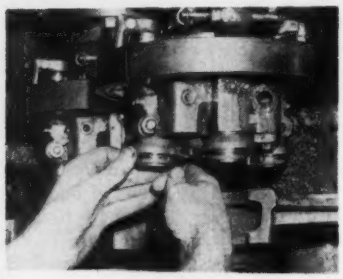
PACKAGING

HERE'S the vital, specially treated roll contact surface. This unit has seamed fully 16 million cans without a sign of wear!



MUCH TIME IS SAVED, since rolls "keep going" with far fewer of these tedious feeler-gage checks.

Slashes Can-Seaming Costs

New chromium-treating process multiplies roll-surface life. This minimizes maintenance and downtime, reduces roll inventories, cuts scrap-can losses

BIG SAVINGS in can-seamer maintenance are reported by Otoe Food Products Co., Nebraska City, Neb. The costs took a decided drop when wear was virtually eliminated on the rolls that close filled cans on multi-station seamers.

► Today, the rolls that join the lock-seamed can body to the end are wearing five times as long as conventional rolls. Credited is Alphatizing—a new process of Alloy Surfaces Co., Wilmington, Del., that diffuses pure chromium into the metal surfaces.

Packer of Morton House foods, Otoe began treating its 440-C stainless steel rolls over a year ago. And, says Vice-President J. D. Mullen, the new tough chromium-carbide wear-surfaces have practically abolished roll changing, bringing benefits of uninterrupted, trouble-free operation of lines.

On a specific pork-and-bean line, no more than a million cans had ever been produced without need of a roll change—but now 16 million have been closed without a sign of roll wear.

Only one adjustment has been made thus far, says Mullen, and that may have been related to the wear of other components.

Cited, too, are notable savings in roll inventories. Where Otoe had formerly carried 140 1st-operation rolls and 60 2nd-operation rolls, only 44 and 36, respectively, are now required.

Sixteen Angelus double seamers—4 to 6 heads—are employed by the company. And when operating at high speeds, just one head that is worn beyond recommended tolerances can run up a waste of 50 or more scrap cans a minute. Hence, the new roll treatment is a boon.

Otoe continues to maintain continuous roll and seam inspection to keep scrap losses down. Machine settings are checked every 3-4 hr., and the units are gone over once a week.

The cumulative checkup data will bear out the progress, and it's possible, says Mullen, that reductions in head-maintenance costs eventually will run as much as 50%. —*End*

WRAPAK

WRAPAK is a modest packaging investment that pays immediate dividends to the manufacturer, the distributor and the retailer in many product lines.

Dividend to the manufacturer: WRAPAK automatic packaging machinery wraps filled containers (cans, cartons or bottles—glass, metal and plastic) of your product with WRAPAK cartons at the high speeds demanded by today's production schedules. In many applications, the WRAPAK system uses substantially less material than is used in conventional partitions and master packers.

Dividend to the distributor: WRAPAK cartons save time in handling and price marking—time and material in reshipment of less than case lots to retail customers.

Dividend to the retailer: WRAPAK makes retail stocking, price marking, and selling easier, more efficient and less costly.

Container Corporation has combined the best qualities of packaging structure, machinery and visual design into the WRAPAK system... Let this unique system help make the distribution of your product a more profitable operation—all the way. Write or call for further information.

CCA

CONTAINER CORPORATION OF AMERICA

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Creating The Package

Makes Winner Out of Sleeper

Chicago baker peps up slow-selling item with 'shipper' that quickly converts to in-store merchandiser . . . Result: Strong sales boost for manufacturer, less handling for retailer

HOW DO YOU pull customers to a so-so selling product?

That was the problem worrying Casey's English Muffin Co., Chicago. Complicating matters was the high performance of a newly installed, fully mechanized muffin line—said to be world's largest—that had production really popping, thus putting even more pressure on sales department to generate additional volume to keep pace.

To get the company on the track to success, National Sales Manager Frank P. Mueller set out to: (1) Sharpen planning, (2) upgrade packaging, (3) offer customers more value, and (4) strengthen sales promotion.

The first step, a check of the marketing situation, turned up some surprises—which Mueller quickly turned to the firm's advantage. For example, English muffins sell well in the East, but the Midwest market was untapped potential. Also, many retailers, not hep to effective display methods, buried the product (as in dairy cases) instead of giving it good exposure on bakery shelves.

Buried and wrong-section displays don't attract consumers to English muffins. Result was poor sales, improper stock rotation, and returns.

Packages That Clicked

Next step, logically, was devising a package that pulled. This was done by switching from the overwrapped U-board to an attention-stimulating complete tray with overwrap.

The new locking-type tray with all-around printing surface is more attractive—a better merchandiser. Stronger than the U-board, it minimizes product crushing and stacks better.

Over-wrapped with polymer-coated cellophane, instead of the former moisture-proof cello (that developed wrinkles), the new wrapper extends shelf-life an additional two weeks.

For proper stock rotation, trays are color-coded on the bottom, each with one to five lines to indicate week of manufacture.

With this new tray pack, Casey's gives the consumer more product and more convenience (no jam-ups in the toaster). These features were achieved by adopting a pack comprising six medium-sized muffins (14¾-oz.). The new offering contrasts with the former six-pack of small muffins (8 oz.) and the four-pack of large muffins (10 oz.).

◀ **CONVERTIBLE SHIPPER** with linen-like finish is easily opened (top) by pulling down top flap and tearing off part of front panel. Case then pops into P-O-P package merchandiser (bottom) for mass display.

Selling price remained the same as a result of benefits gained from new equipment that automates the production. Bakery operations, carried out continuously and automatically, produce muffins that are more uniform in size and shape, hence pack better into trays and improve appearance—thus creating more impromptu buying.

The firm still sells the large size muffin packs, although sales are declining rapidly in favor of the medium size. Mediums, consumers found, weren't too large to pop into a toaster, and one tray serves six people instead of only four. Further, the pack of six smalls made the package look too little, gave the consumer the impression she wasn't getting her money's worth.

Printed messages on tray win consumer's attention and promote tempting product uses to create more purchases. Also included are how-to-prepare instructions and suggested recipes. Moreover, the theme, "Most any old time is English muffin time" helps extends consumption beyond the breakfast period.

The most effective packaging-merchandising switch was an eye-catching shipping case (developed through cooperation of Cooperative Paper Co. and Stone Container Corp.). It does double duty at point-of-purchase. An easy-to-open, special promotion-type "shipper," it's designed for speedier store handling for 1-case bread shelf-displays, as well as for mass-floor setups.

This shipper, of linen-like finish, has an easy-to-open feature: Pulling the top front flap exposes and neatly displays four layers of tray-packed muffins (twelve trays to case). Trick here is use of a front panel with inner side die-cut half-way through and outer surface red-ink-scored (to

With 'Ship 'n Sell' Case

PURCHASE-TEMPTING floor setup (that faces both ways) passed acid test in Detroit supermarket that had previously sold only a few packages a week of a competitive brand. Result: All 50 cases shown here were snapped up in less than a week.

show retailer where case breaks out). Front top flap tears off simultaneously with front panel, which rips cleanly open 1½" away from sides and bottom.

Corrugated container is sealed at bakery in an unorthodox manner—with rear flap laid down first with display card attached, then two side flaps, and finally the front glued down. Purpose is to avoid damaging the special promotion card glued to inner side of back flap, and to permit retailer to easily grasp front flap while pulling and tearing out face along die-cut scoring. Beauty of the highly colored p-o-p piece is that it's a part of the shipper—doesn't have to be packed separately.

Dramatic Stopper

When the case pops out into a package merchandiser, retailer builds a sales-getting single or mass-floor display. A mass setup is dramatized by the carton's vertically raised back flap, which acts as a sales promotional piece.

Presenting product stock in this manner is effective because the package displays itself—tells its sales story (what product is, how to prepare it, what meals go good with it, etc.). And the muffins are ready for the consumer to buy.

Another important technique: Mueller is pushing for team-ups of muffins with related items, such as butter—a natural combination.

Have the mass floor displays paid off?

In Houston, a major supermarket that set up a 100-case display sold out its stock in one week. Same success was repeated the second week.

Since then, average weekly sales have continued to climb. And all this was accomplished despite introducing the muffins during a slack period—the year's hottest month.

A Detroit supermarket's former weekly sales of a competitive brand averaged 24 to 36 packages (4 large-size muffins). It switched to Casey's package, and set up the volume-building "show cases" in a 50-case display. This, too, was a one-week sell-out, and average weekly sales thereafter stayed far above pre-promotion rate. Also, former complaints about stales were eliminated.

A 10-case display was arranged in a smaller store of another chain that had never stocked the muffins. Despite this, goods were sold out in one week.

These successful display promotions involved no special prices or deals, says Mueller, and they were given but little advertising support (just local-newspaper single runs of a 2x3-in. ad).

The merchandising impact of these display-shippers isn't the whole story. Retailers like them for the many in-store benefits they offer. Examples: Easy-open feature of the case, faster handling (ease with which displays are built), and fewer man-hours to handle cases (tray-by-tray shelf-stocking abolished).

Mueller stresses the follow-through angle in his sales promotion. A mailing piece is directed to buyers and sales managers of customers.

Literature uses a courtroom scene theme ("You be the judge") that's backed up by exhibits, records, etc. A convenient, postage-paid, return card enables prospects to ask for details and samples.

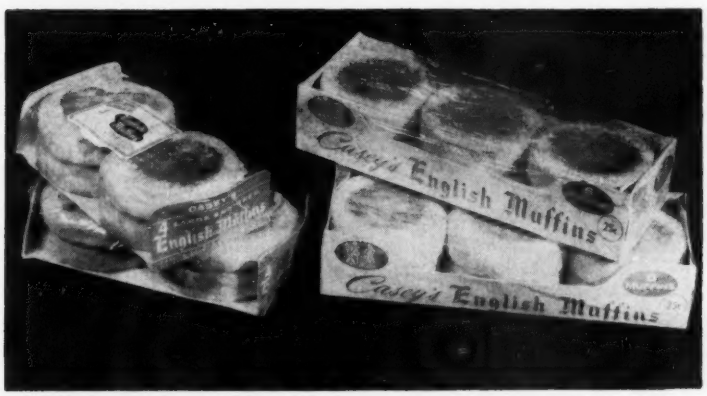
Promotional flyers are also relayed to grocery cooperative members through their headquarters office. They carry an appealing offer and direct buyers to the pertinent page and code number in the order book.

Stores still preferring to display English muffins conventionally can order regular cases containing 6, 12, or 24 trays.

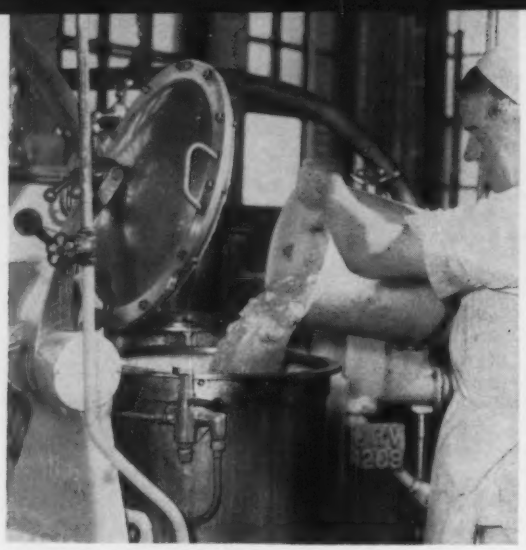
About 10% of Casey's rapidly increasing output is packed under private label into printed trays, or plain white trays with a private label-card insert. Latter packs are designed to supplement a retail baker's product line.

Within a few months, Casey's has widely extended its distribution from 500 to 1,500 miles. Sales are now handled through food brokers, and all leads that result from the mailings are relayed to them for follow-up.

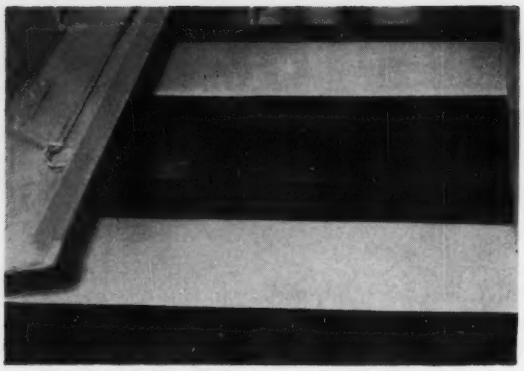
Casey's English muffins permit the grocer to make money, because the markup is in excess of the 20% operating cost. It's not an item that 'stays on the shelf.' —*FE Staff*



ADDED STURDINESS, more selling appeal, and extended product shelf-life are features of redesigned muffin package (right). Former container (left) was overwrapped U-board type, lacked structural support on sides.



1. **LIQUID EGG MIXTURE** is poured into fast European-developed pressure mixer to make batter for sponge-cake Swiss rolls. Pressure moves finished batter through pipes to depositors.



2. **RIBBONS OF BATTER**—at rate of 30 miles a day—move continuously from mixing and depositing operations through baking, cooling, cutting, and rolling operations that require very little labor.

Lyons of London Makes Foods on Conveyors

AMERICAN food manufacturers can take a few tips from J. Lyon & Co., Ltd., London, England. This firm has achieved outstanding capacity and efficiency through specialized production facilities designed by Lyons engineers and technologists.

Swiss rolls (filled cake rolls), small pies, and tarts are turned out at phenomenal rates on continuous lines patterned after those used in modern cooky and cracker plants.

No less than 30 miles of 12-in.-wide sponge dough ribbon is produced daily in making Swiss rolls. And so few employees are used in the operation as to make labor an almost negligible cost factor. Twenty lines of continuous dough ribbons feed in pairs into 10 continuous ovens.

Pressure whippers, only recently introduced in the U. S. (see FE May, p. 74), produce the sponge dough and move it through pipes to depositors. The latter feed the dough onto traveling steel belts that have been automatically greased by a reciprocating brush to prevent sticking. After traveling for 4 min. through 70-ft., single-pass ovens, the sponge cake ribbons leave the baking belts with the aid of wire strippers at the ends of those conveyors. Then the ribbons pass down an incline to deposit upside down on a second set of belts traveling in the opposite direction. These belts carry the cake through cooling tunnels where conditioned air is blown over them for a quick 4-min. cool.

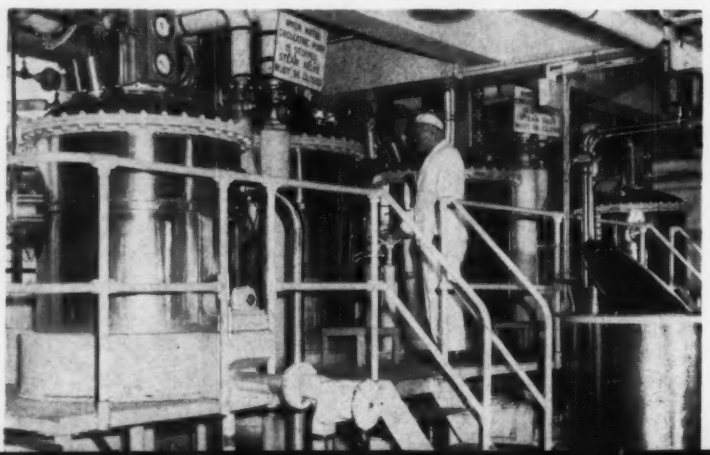
Rollers Apply Filling

Now each ribbon passes under a roller-feed depositor to receive Swiss roll filling material, which is spread by passing under a metal blade. Then a reciprocating circular blade travels across the belt to cut the coated cake ribbon into 6-in. widths. This cutter moves in a direction diagonal to the belt to compensate for belt travel and make a straight-across cut.

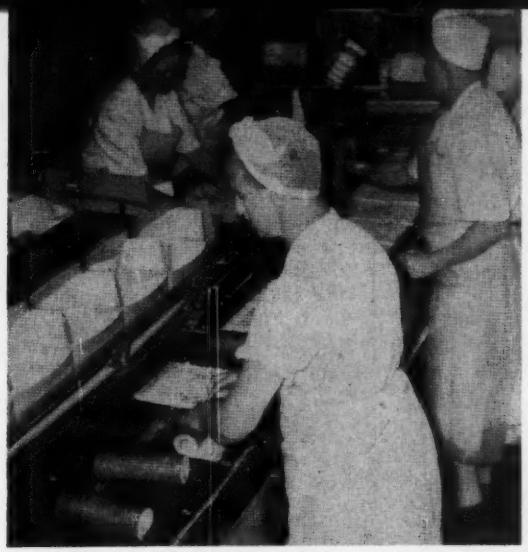
Girls standing by the belt quickly roll the flat pieces, with little more motion than a twist of the wrist. Plain rolls are immediately put into lined cartons. But rolls to be coated are placed on small, curved metal carriers hanging from an overhead chain conveyor. This chain travels to an automatic chocolate enrober.

There the rolls are manually transferred to the enrober feed conveyor —endwise and five across. And after being coated top and bottom, they

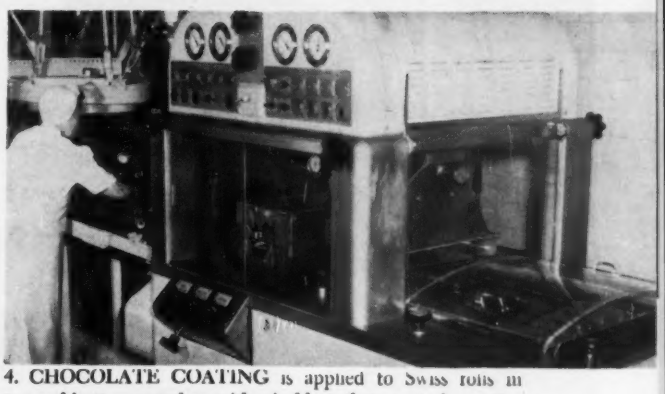
FRESH FRUIT FILLING for pies is cooked in stainless steel vacuum pans at 150 F. for about 30 min. It then is blended with thickening and automatically fed to filling line.



FRANK K. LAWLER
Editor, "Food Engineering"



3. **ROLLS ARE FORMED** quickly by hand from cake that is machine coated with filling, then automatically cut into rectangles on continuous conveyor. Some rolls are packaged uncoated.



4. **CHOCOLATE COATING** is applied to Swiss rolls in top-and-bottom enrober with air blast that controls coating thickness. Rolls are transferred from chain conveyor to enrober manually.

—But Fast!

2 million pies and 1 million tarts weekly—also 30 miles of cake strips for rolls daily—produced with little labor on special continuous lines.

pass under an air-blast to control the thickness of the warm liquid chocolate. After traveling along a cooling conveyor, the rolls are packaged.

30,000 Sponge Cakes per Hr.

Another specialized operation produces 30,000 sponge cakes an hour continuously. Molds on a chain conveyor are filled with batter by two depositors, each with 16 nozzles. Sugar is dusted onto the batter by a vibrating feeder, and the batter goes through a two-pass oven. The cakes cool as they travel via overhead conveyor to the packaging area. Six girls put the cakes into cartons that are set up and lined with waxed glassine by machine.

A second machine closes the cartons and applies an attractive and protective heat-sealed overwrap at 60 per min.

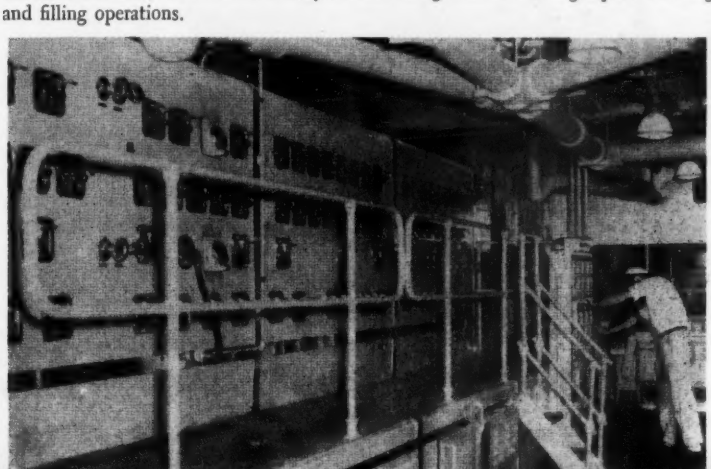
2 Million Pies Per Week

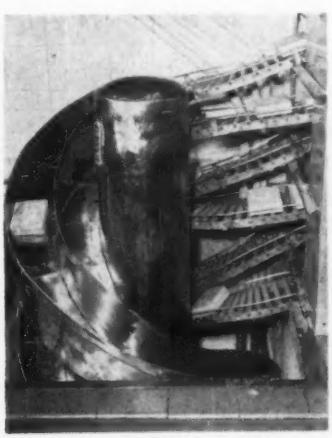
Small individual fruit pies are gang-formed, filled, baked, and packaged at the rate of 2 million weekly with few production workers.

Fresh fruit filling for the pies is vacuum boiled at 150 deg. F. for about 30 min., then is blended with thickening agents and fed automatically to the filling line.

Pie crust dough feeds from batch mixers on the floor above. Then a continuous sheeter extrudes it as a wide band over pie pans moving rim-to-rim on a chain conveyor. This conveyor carries the dough-covered pans under an automatic piston filler that deposits a measured amount of fruit filling into each pan. Weight of the filling shapes the bottom-crust

PIES ARE BAKED for 14 min. in 70-ft. gas-fired oven. They travel through oven 12 abreast on two continuous conveyors that bring them from high-speed forming and filling operations.





SIX CONVEYORS and chutes move packaged pies by gravity to shipping department. Pies are packed in individual cartons by 60-per-min. automatic machines.

dough to the pans, then the top-crust dough is applied continuously by a second sheeter as the pies move along on the conveyor.

A rotating drum cuts the dough by pressing it against the tops of the pie tins, the trim being returned to the sheeter for re-use. Holes are put into the top crust by a reciprocating head. Finally, a glaze made of eggs, sugar, coloring, and other ingredients, is automatically sprayed over the pies, and they are ready to bake.

The pies travel non-stop through a 70-ft. 420 F. oven for 13¼ min., and go via the same conveyor through cooling and to the packaging operation.

At the packaging station, girls transfer the pies to single-file flight conveyors after removing them from the pans. These conveyors feed packaging machines that set up cartons, push the pies from the conveyors into the cartons, then close the packages at 60 per min. per machine.

Million Tarts a Week

Lyons also has designed and built special equipment to produce jam tarts continuously at high speed, and it turns out one million a week.

Small tart tins are conveyed in 6 rows under a continuous sheet of dough. Reciprocating dies form the tart shells, and these are automatically filled with jam. Each pair of tarts in a 6-wide row receives a different filling.

After passing through the ovens and cooling in continuous flow, the tarts are machine packaged six to a carton.

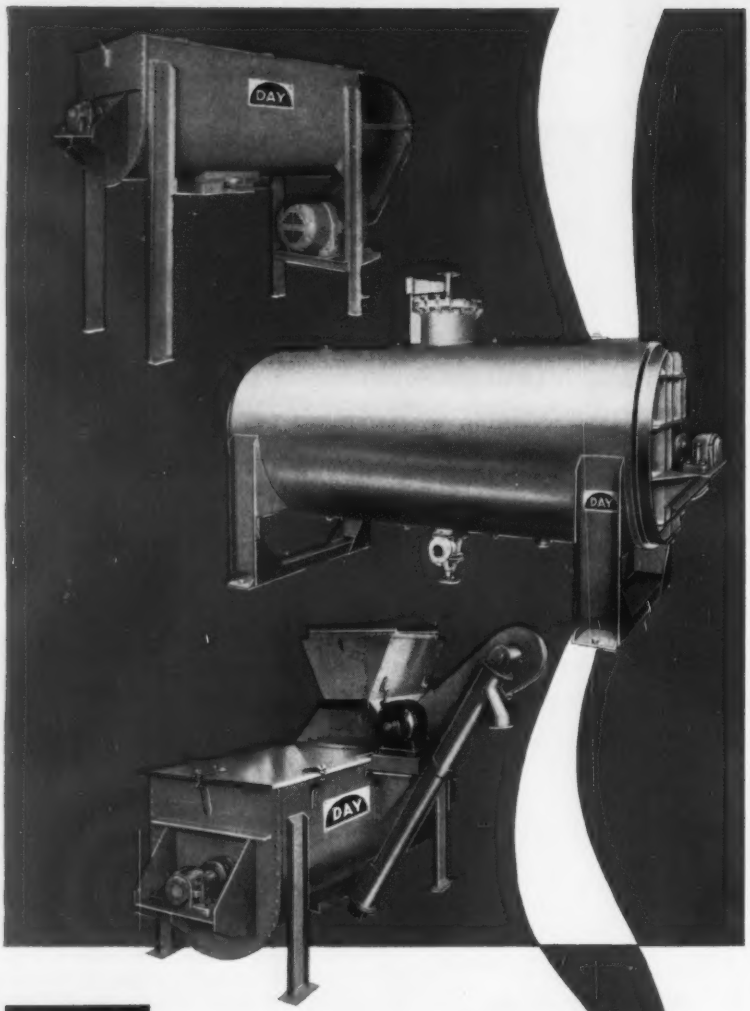
This new process is tremendously more efficient and productive than the old method involving hand-filling on slow rotary formers and manual loading of the oven.

Pushbutton Handling

Lyons receives bulk flour, sugar, and fruit pulp in tank trucks, and conveys them by air pressure to holding tanks. Batch quantities are weighed out as needed by pushbutton control. Chocolate also is received in bulk.

Trains Young Men

To assure an adequate supply of skilled men, Lyons operates its own training school. Each year it starts 20 or 30 young men of age 16 on a 2-year baking course. These youngsters learn the technology of making cakes by hand so that they know the fundamentals. Afterwards they learn how to bake by highly efficient mechanized methods. —*End*



DAY builds RIBBON BLENDERS

to meet all your needs - - -

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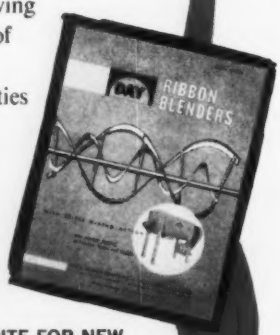

WRITE FOR NEW BULLETIN No. 800. It gives you detailed information on the complete line of DAY RIBBON BLENDERS.

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Division of The Cleveland Automatic Machine Co.

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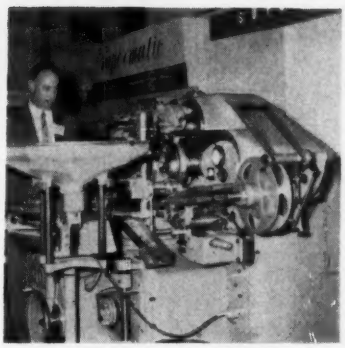
MANUFACTURERS OF QUALITY MIXING, BLENDING, SIFTING, MILLING EQUIPMENT SINCE 1887

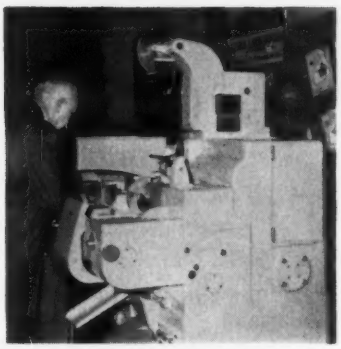
7 New Machines That Speed Output

Packaging, forming, and cooling units that save time and labor—up sanitation and quality, too—take spotlight at NCA Show in Chicago

Improved Packagers

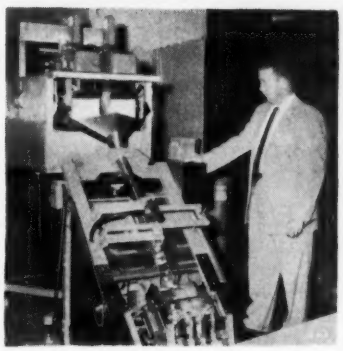
THIS UNIT has changeable feed plates that enable either open-fold wrap of individual squares or forming of overwrapped packets of 5-15 squares each at 40-80/min. —*Supermatic Packaging Corp., Hillside, N. J.* (300)

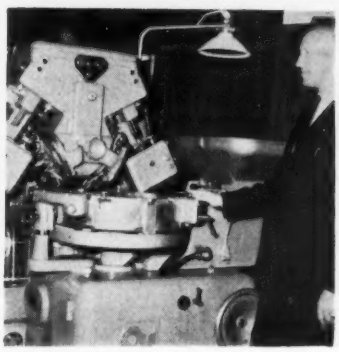




WRAPPER gently transports hard candies to grippers that twist-wrap 350 pieces/min. Sensing device stops paper when disk pocket is empty.—*Carle & Montanari, Hackensack, N. J.* (301)

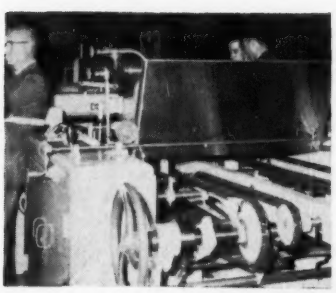
BAGGER forms, fills, seals at up to 55/min. Has air-weighing system, sloping former-filler tube, slide-out roll-stock racks for easy changing of film.—*Woodman Co., Decatur, Ga.* (302)





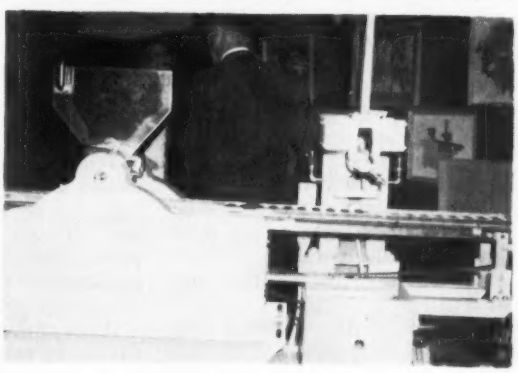
2-IN-1 MACHINE wraps two sweets for each revolution. Handles up to 600/min. in variety of wraps. Runs 2 hr. without reel change. Has photoelectric registration. —*Otto Hansel Junior, Hanover, W. Germany.* (303)

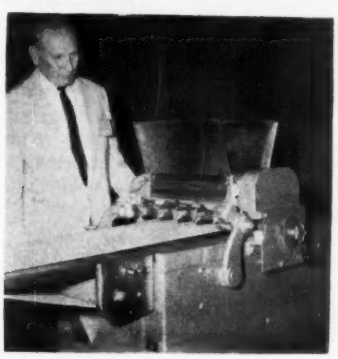
Advanced Depositors



NEW DEVICE assures micro-accurate center weights. Vibration-free operation makes for smooth handling and transfer of starch trays.—*National Equip. Corp., N.Y.C.* (304)

20-NOZZLE UNIT places paper cups 20 at a time in racks or pans. Machine is synchronized with depositor, saves labor of up to 10 girls.—*Vacuum Candy Mach'y. Co., N.Y.C.* (306)

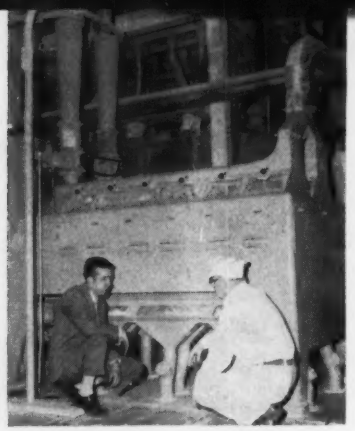




BELT DEPOSITOR incorporates adjustable shuttle and elevator table for maximum uniformity in placement of centers. Speeds: 20-25 strokes/min. — *Triumph Mfg. Co., Cincinnati.* (305)

◄ **HEART** of new conveying system is this single-stage, overhung compressor driven by 40-hp. motor. System makes 28 separate lifts for roller mills, sifters, purifiers, etc.

DOUBLE-DECK purifiers ► with independent air control for each screen-deck area upped mill's flour-making capacity.



New Life for an Old Mill

High-pressure conveyor system and advanced processing equipment breath new efficiency into flour facility long hampered by space limitations, serious overloads

DIFFICULT materials-handling problems generally aren't posed in a new plant—for the designers usually have given key attention to the matter of fitting in the required handling facilities.

But where the plant is an old one, handling improvements that one would like to make may be hampered by limitations of the building.

The newly designed high-pressure pneumatic conveying system pictured here is graphic proof, however, that one's hopes for a more efficient system can be inexpensively realized in an existing building. And it isn't necessary to make many compromises.

This system was installed in flour-milling department of Williams Milling Co., Quincy, Mich. Here's what mothered it:

1. Demand for soft wheat flour greatly exceeded mill's capacity.
2. No production area could be sacrificed. Building expansion was possible, though costly.

What made the problem even tougher was the need to get more production out of existing double-stand reduction rolls, sifters, and purifiers.

Engineers of Allis-Chalmers Mfg. Co. studied these requirements, then put in the high-pressure conveying system. They made two additional modifications—replaced the two 60-yr.-old purifiers with newly designed double-deck units (A-C), and tore out the secondary flour dust filter and installed a heavy-duty Day unit with reverse-jet cleaning rings.

At modest cost, the new system hiked output to 1,200 cwt.—double the former capacity. And it was installed with only a 5-week down-time. Other benefits resulted, too. Among these were: Less congestion in production areas . . . less dust in milling rooms . . . Improved sanitation . . . Reduced maintenance . . . Increased flour extraction.

Williams is completing its plant modernizing by installing a "fluidizing" (Superior Separator) system for bulk handling of outbound shipments in Airslide cars and trucks.

How System Operates

Williams' new system operates from a single-stage, high-speed centrifugal turbo-blower (40 hp., 3,550 rpm.). It was designed to increase product-to-air ratio to 3-6 lb./lb. of air, compared with a 2:1 ratio of low-pressure systems.

It is a multiple-lift (28) operation, hooked to roller mills, sifters, purifiers, etc., and operating on the negative-pressure (vacuum) principle —40 in. vacuum, 2 in. back pressure.

Long-cone, highly efficient primary collectors (28) are of A-C design. Here, flour stock is centrifugally precipitated from air stream, then fed through rotary, airtight volumetric feeders to intermediate process units. Clean air flows from top of cyclones and collects in a common manifold, to be drawn through rotary compressor to secondary filter (Day). About 8 lb. of dust/hr. is carried over into the secondary filter.

About the New Purifiers

New units were designed for maximum cleanliness and capacity, lower air consumption (60% less), greater flow flexibility, and minimum maintenance.

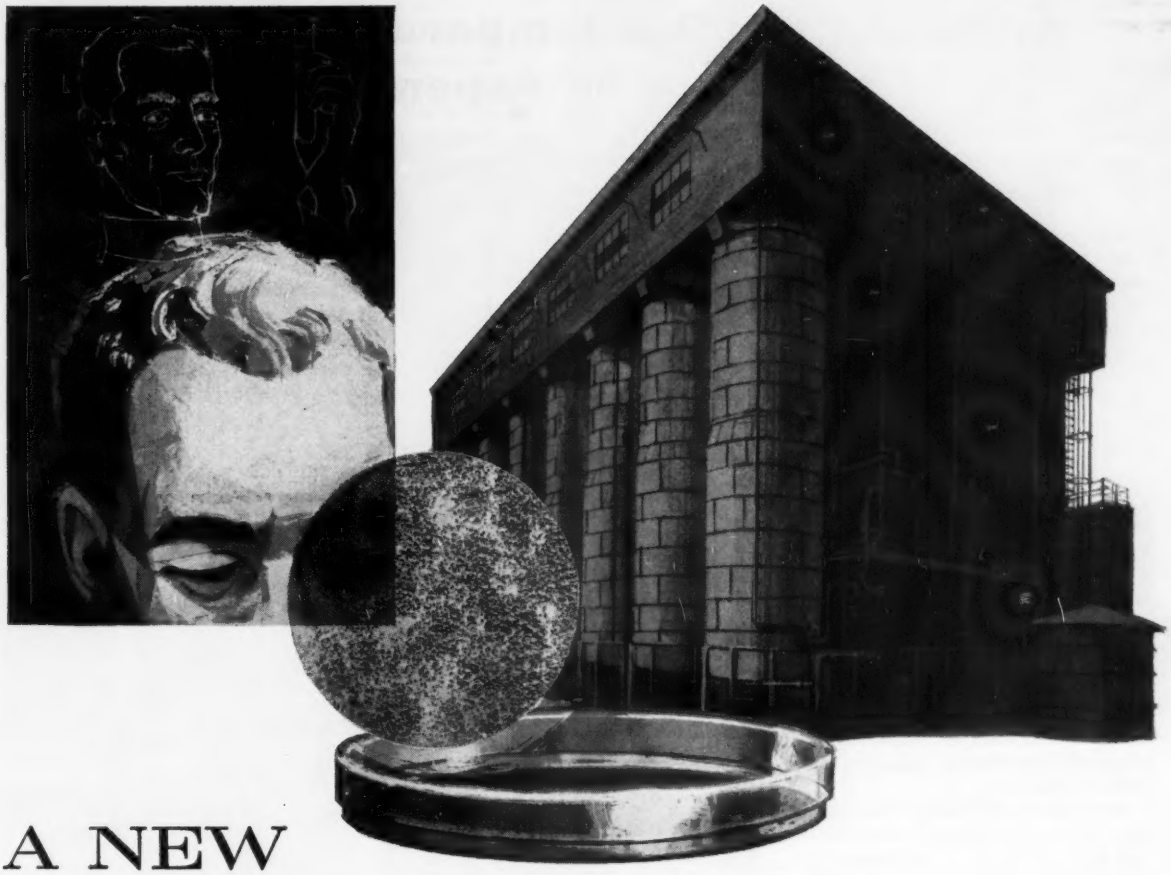
These all-metal 40x72-in. units are positioned one above the other and match-weighted to eliminate counterweights. Decks are equipped with screen cloths, with frame sections that are removable during operation.

Flour middlings are delivered through twin primary collectors and rotary feed valves. They move across top deck, advancing over finer to coarser cloth. Middlings pass through to positive stock classification, valve-equipped hoppers. Tailings are returned to circuit for further reduction, sifting, and purifying. Light bran is discharged through an air-exhaust outlet.

Air flow (1,200-1,500 cfm.) through decks is sectionally controlled to coincide with screen mesh-size areas. It's drawn through louvers in side of unit, up through twin decks, and out suction hood.—*End*

H. D. VANDERLIP and JOHN V. ZIEMBA

Engineer-in-Charge of Food Processing Machinery, Allis-Chalmers Mfg. Co., Milwaukee, and Associate Editor, "Food Engineering"



A NEW
basic source for CITRIC ACID, U.S.P.

Here is an unusually pure citric acid produced in the Midwest by Miles Chemical Company's unique deep fermentation process. Ready for immediate shipment in truck-load quantities.

For years Miles has produced a considerable volume of citric acid mainly for its own use in pharmaceuticals. A unique deep fermentation process, pioneered by Miles, yields a product remarkably free from contamination and meets Miles' most strict purity and mesh specifications.

This deep fermentation capacity has been expanded to provide a reliable, large volume supply of citric acid, U.S.P. for the open market. It's ready for shipment when and where you need it. Our plant is centrally located . . . a convenient producing point with excellent transportation routes in all directions.

Write for full details. A Miles Chemical representative will be happy to discuss your requirements at your request.

Miles Chemical Company

division of Miles Laboratories, Inc.
Elkhart, Indiana

CIRCLE 73 ON READER SERVICE CARD

Accurate, reliable temperature control need not be expensive

By John W. Ritter, Test Engineer
Sarco Company, Inc.

Temperature regulation equipment for food processing should be simple to use and easy to maintain. It should be absolutely reliable for the protection of the product—and inexpensive enough to use economically.

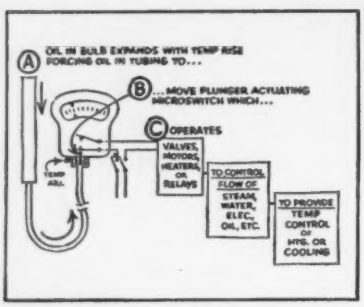
The satisfaction of these multiple demands is a matter of selecting controls that match the job, buying only the amount of control you need and no more.

A very good solution to this problem is the specification of a Sarco Electric Indicating Control. This type of control allows you a wide selection of ranges and adjustment within those ranges for your exact operating conditions.

The same unit can be used for controlling steam, water, or electricity and will regulate heating or cooling or both.

For additional flexibility in controlling heating or cooling, various interval timers and other control devices can be incorporated with Sarco Electric Indicating Temperature Regulators.

Sarco Electric Indicating Temperature Regulators include large easy-to-read dials with both actual and set temperatures on one scale, graduated in regular, even increments.


A
OIL IN BULB EXPANDS WITH TEMP RISE FORCING OIL IN TUBING TO...
B
...MOVE PLUNGER ACTUATING MICROSWITCH WHICH...
C
OPERATES
VALVES, MOTORS, HEATERS, OR RELAYS
TO CONTROL FLOW OF STEAM, WATER, ELEC., OIL, ETC.
TO PROVIDE TEMP CONTROL OF HTG. OR COOLING

This rough sketch shows how the Sarco LSI Electric Indicating Temperature Control can be used to actuate valves or relays, control flow or provide temperature control for heating or cooling.

In addition to simplicity and reliability, the Sarco control can be quite easily maintained by the regular maintenance crew, and its installation is a simple and inexpensive job.

Installed on jacketed kettles, such as that shown here, the SARCO LSI electric temperature controller responds to temperature changes of ±½°F.

You get the sensitivity you need— in the range you need — with reliable SARCO Electric Indicating Regulators

The installed cost of Sarco Electric Indicating Temperature Controllers is low, and they are inexpensive to maintain. They provide the sensitivity you need over the temperature range of *your* process. You get response to temperature changes of ±½°F. You change control setings simply by turning one knob. You get a continuous visual check on process temperature by reading both set and actual temperature on one large scale.

Sarco Electric Indicating Temperature Controllers are available for temperatures from 90°F. to 650°F., in operating ranges from 100°F. to 400°F. In addition, they offer many switch sequence combinations, such as step-heating, heating and cooling, and temperature control with the operation of visual or sound signaling devices.

Write today for our latest bulletin on Sarco Electric Indicating Controls.

6928-B

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TEMPERATURE CONTROLLERS • STRAINERS • STEAM TRAPS • HEATING SPECIALTIES

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CIRCLE 75 ON READER SERVICE CARD→

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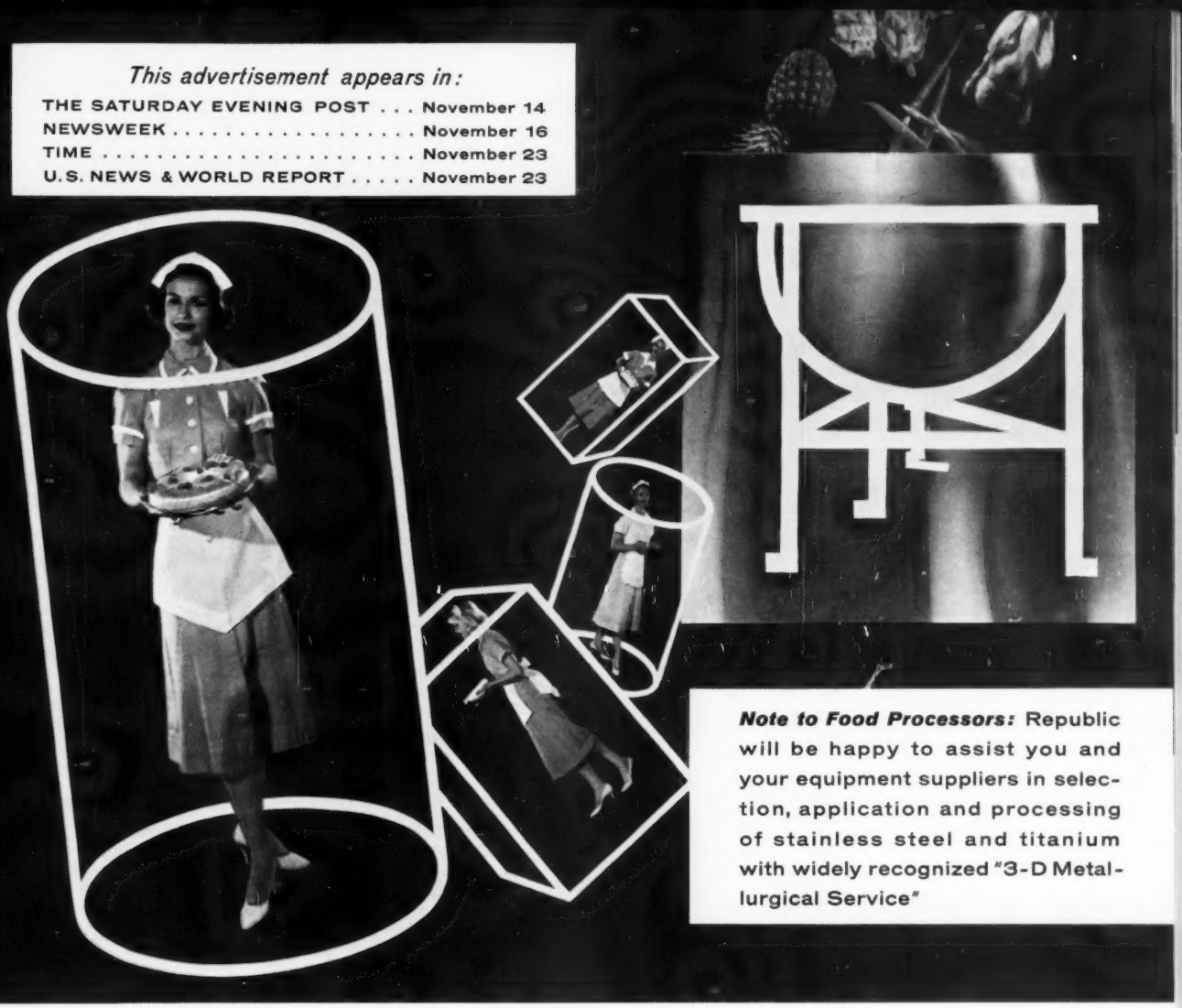
TIME . . . . . November 23
U.S. NEWS & WORLD REPORT . . . . . November 23



Note to Food Processors: Republic will be happy to assist you and your equipment suppliers in selection, application and processing of stainless steel and titanium with widely recognized "3-D Metallurgical Service"

The facts about processed food prices

"Built-in Maid Service"–your bargain

Food processors have caused much more change than just an improvement in your diet. They've created a major change in the nation's domestic pattern. For instance, where are the kitchen maids you and your neighbors might have had thirty years ago?

"Built-in Maid Service" is in every package of prepared food. The cost of this maid service (which few people today could afford) is the washing, peeling, slicing, spicing, cooking, packing that's included in the price. The great variety and excellence of processed foods enables 15,000,000 married women to hold jobs outside their homes and still provide their families with meals that would pop the eyes of most of the world.

Food processors, who have brought this about, have virtually standardized on wonderfully sanitary stainless steel for their equipment. But titanium, also, is beginning to enter the industry. Republic Steel is the world's largest producer of stainless and alloy steels, and a leading producer of titanium.

Everybody benefits from modern food processing so much every day that we all have probably forgotten how much drudgery has been taken from our lives by the food processors. All factors considered, there is hardly a more graphic example of lowering costs while making a better product than the contribution to society made by the managements of the food processing industry.

REPUBLIC STEEL

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World's Widest Range of Standard Steels and Steel Products

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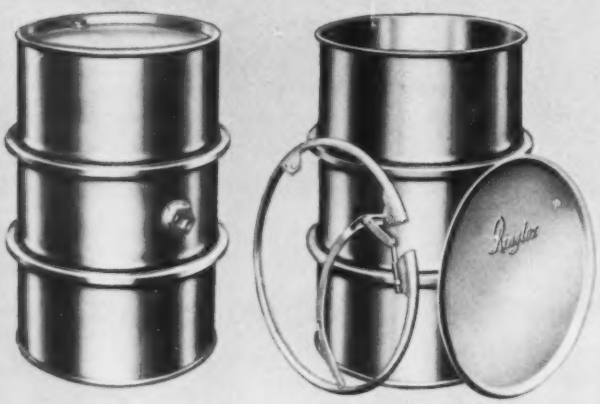
REPUBLIC STEEL PRODUCTS...

Your bargain in lower-cost processing

REPUBLIC STAINLESS STEEL offers food processors a real bargain in easy, fast, thorough, and economical cleaning. Usually a routine washing with soap and water is all the cleaning necessary. Smooth, hard, dense surfaces lock out contamination and corrosion. Tough, strong stainless protects against the need for repairs or replacement, even after long use. Contact your supplier, or write us for full facts. (Stainless steel steam jacketed kettles, shown left, are fabricated by Legion Utensils Company, Inc., Long Island City, New York.)



REPUBLIC STAINLESS STEEL DRUMS mean maximum protection against corrosion and contamination for your packaged goods. Stainless drums never need painting. Withstand hard use and abuse. Available in 55- and 30-gallon sizes, double seamed, or all-welded construction with either I-bar or pressed-out rolling hoops. Meet ICC specifications. Mail coupon for full facts.

REPUBLIC ELECTRUNITE® STAINLESS STEEL TUBING is ideally suited for sanitary tubing applications. Outstanding corrosion-resistance and a wide range of resistance to temperature, pressure, and physical damage mean that ELECTRUNITE will last indefinitely. Every foot is uniform in wall thickness, of uniform diameter, and meets every requirement called for by ASTM and ASME specifications. It is available with O.D. polished, I.D. polished, or both, in a complete range of sizes. Contact your ELECTRUNITE representative, or mail the coupon for more information.

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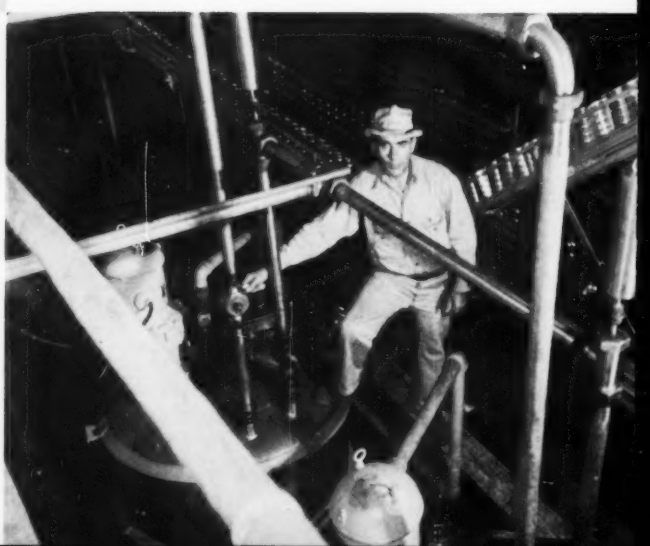
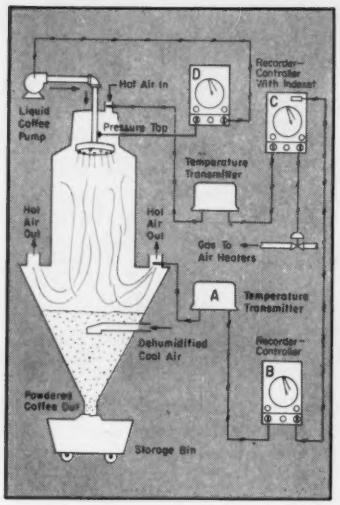
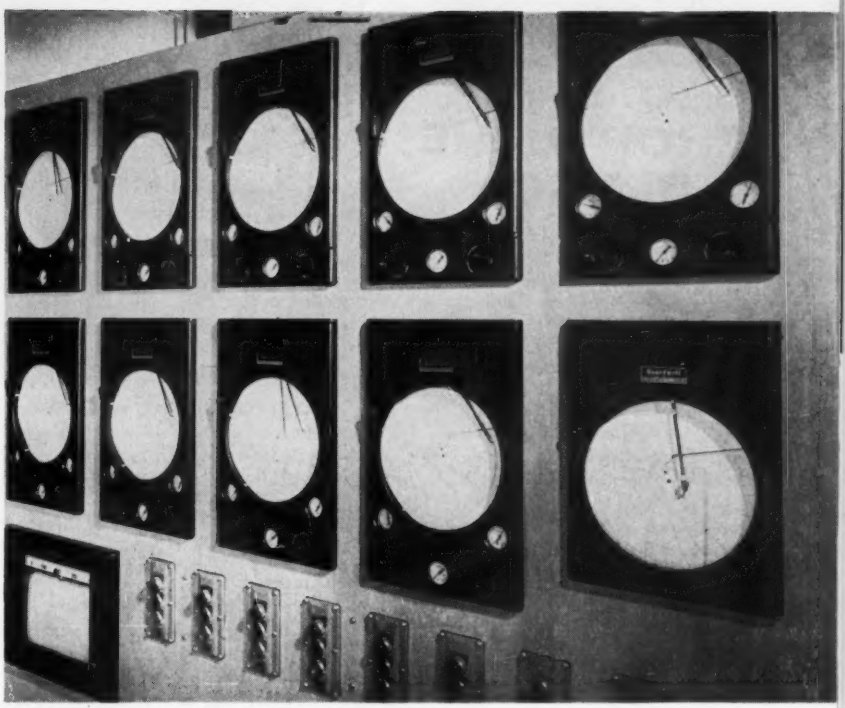




HOW CONTROLS AUTOMATE DRYING OPERATION. Temperature transmitter (A) at bottom of dryer measures outlet air temperature and feeds reading to recorder-controller (B). When higher or lower than optimum, this unit transmits signal to inlet air controller (C). Indexet in this unit changes set point on gas control that feeds air heater. Flow of incoming coffee extract is controlled by (D).



TEMPERATURE and flow of liquid to extractors is controlled and recorded on panel. Profile on multi-point strip-chart (left) is regularly compared with a standard to insure uniform operation.

Controls Process for Top Quality

Regional manufacturer automates critical routine in new instant coffee plant, gains three important benefits

HOW MUCH AUTOMATION can a small manufacturer afford?

This was the problem faced by S. A. Schonbrunn Co., Palisades Park, N.J. when it decided to produce a high-quality instant coffee to complement the well-known regular brand "Savarin." Latter is distributed in the New York Metropolitan area and eastern Pa.

Company executives knew, that without adequate control of certain processing steps, product uniformity and high quality were practically unattainable. On the other hand, a point could easily be reached where improvement in quality and reduction in operating cost would not offset the greater investment.

So company engineers designed a physical plant with what they felt was optimum of automatic control.

BURTON B. RITCHEY

Minneapolis-Honeywell Regulator Co., Philadelphia.

Now, following some months of operation, the setup is credited with:

► 1. Cutting processing time by one-third.

► 2. Eliminating errors in judgment that could easily effect product uniformity and thus alter customer confidence in the brand.

► 3. Enabling operation with a minimum of personnel.

Preparing the Extract

Savarin Instant begins with raw coffees of finest available quality from the company warehouse. These are blended, roasted and ground to a formula developed specifically for the instant process. The ground coffee is then placed in a bank of extractors. Here, close control of flows and temperatures is necessary to produce a consistent, high-quality product. All batches must be of equal strength. Thus, brew temperature and water flow must be constant for each batch.

To insure this, temperature of liquid entering each extractor is measured by a Brown filled system thermometer. Its bulb, which is inserted in incoming line just ahead of extractor, feeds a signal to panel-mounted recording-controller. A pneumatic control unit in the recorder operates a valve that admits steam to the heat exchanger of each extractor.

A multi-point ElectroniK strip chart recorder is used to check brew quality. It plots varying temperatures as the brew passes through the

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Essential Chemicals From Hydrocarbon Sources

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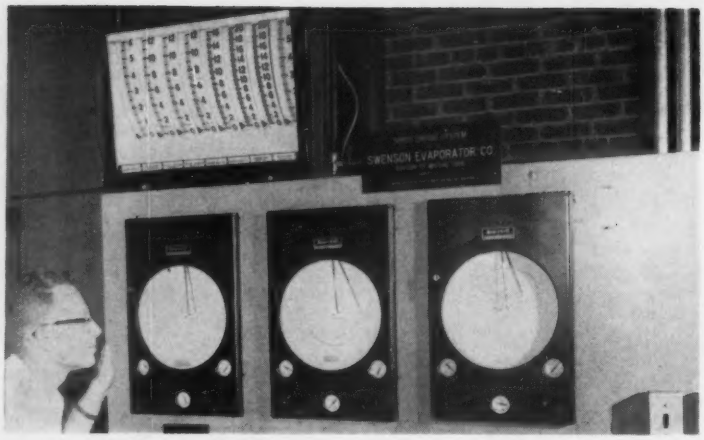


DRYER CONTROLS are simple yet effective. Two controllers (left) are cascaded to insure uniform discharge air temperature. One on right controls extract flow. Draft indicator (top) gives pressures in various parts of dryer.

extractor bank, and is actuated by thermocouples located in the extractors and intermediate piping. The profile curve produced is constantly matched against an optimum set up by company engineers.

Water fed to extractors is measured by an electric flow meter in main line ahead of heat exchangers. Meter transmits its signal to a recording controller mounted on extractor panel. A pneumatic control unit in recorder operates a valve to regulate flow rate.

Coffee leaves the extractors as a heavy solids brew. It is centrifuged to remove fine insoluble material, then stored in chilled tanks.

Drying the Brew

For transformation from a liquid to a powder, the extract is pumped to top of an 80-ft. Swenson evaporator. Inside the tower, hot dry air and the liquid are mixed (see drawing). As the mixture moves downward, dry air removes moisture from the coffee.

To prevent the now moist hot air from rewetting the dry product, cool dehumidified air is blown in near the bottom. This provides a cold air "dam" which forces the moist hot air back to outlets about half way up side of the tower. Meanwhile, the coffee powder is forced out the bottom by the current of dehumidified air.

Incoming and outgoing hot air temperatures dictate the taste, color, and dryness of the powder. They are controlled by two Honeywell Tel-O-Set pneumatic temperature transmitters. One is located at top of evaporator with its bulb in the incoming air. Bulb of the other is in outgoing hot air stream. They transmit signals to two recorder-controllers in operating station at one side of evaporator.

When temperature of outgoing air exceeds or falls below preset limits, controller in this line feeds its signal to an adjustable Indexet unit in inlet air controller. This unit, in turn, adjusts set point of inlet air controller which actuates a valve in gas line which varies fuel feed to air heater.

Rate of flow of liquid coffee must be controlled to avoid variations in size of dried particles. To accomplish this, flow to evaporator tower is recorded and controlled by a pressure controller. This instrument obtains its measuring signal from a pressure tap in coffee line immediately preceding sprays in evaporator. It operates a pump which varies the pressure in accordance with preset limits and thus controls the flow.

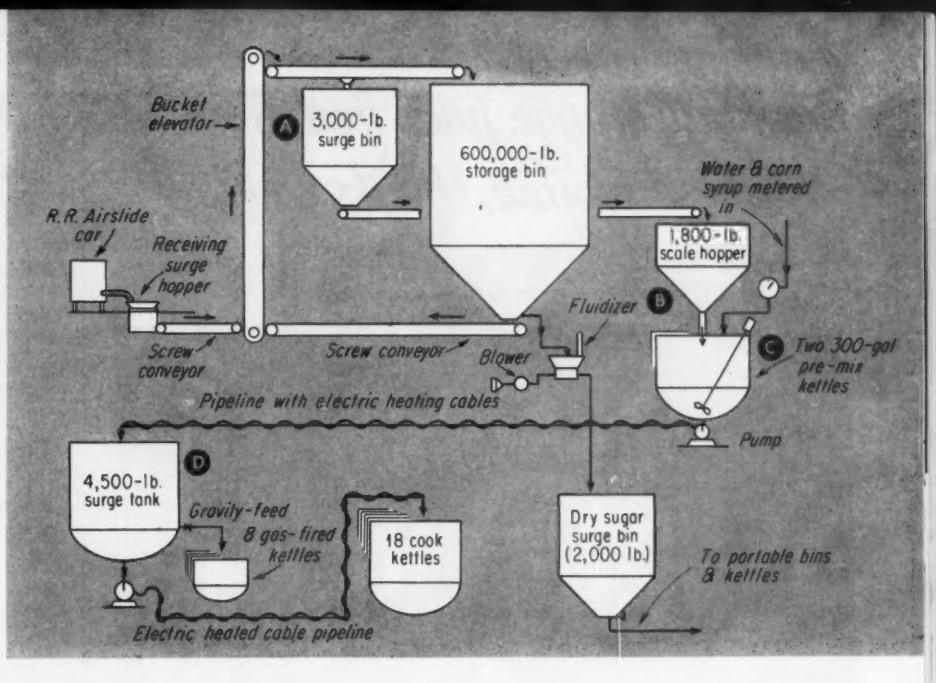
To control static pressure within evaporator, there are nine pressure taps throughout the unit. These feed signals to a nine-section vertical scale draft indicator mounted on control panel. Operator adjusts blower speeds through panel-mounted rheostats to maintain negative pressure within desired limits.

Dried coffee is removed from evaporator and stored in large mobile bins. These are placed in a humidity controlled room until product is packaged and shipped. This storage time is as short as possible.

Instrumentation such as described here has definitely played a part in the success of Savarin Instant. Without such controls, product uniformity and high quality in an instant coffee are impossible. —*End*

Neat Coupling Of Systems

Specially engineered master pre-mix setup is designed for conveying sugar from surge bin (A) to scale hopper (B) and into either of two mix kettles (C) along with water and corn syrup. Mix is then pumped to holding tank (D) for gravity feed into 8 cook kettles and pump-circulation for metering into 18 others.



Teaming of Bulk Methods Brings—

Big Stride in Handling Ingredients

Master pre-mix is prepared through ingenious confluence of raw materials . . . Streamlining slashes confectioner's costs and time, ups product quality

LET'S SAY that you've just adopted some advanced operation, with notable progress in new economy and efficiency. Quite humanly, you then may be tempted to sit back and bask in your new benefits.

But at this point it's wiser, instead, to give the situation another very close look—for brand new methods often can be parlayed into big extra benefits.

Take bulk buying and handling of major ingredients. Already, our candy plant—Paul F. Beich Co.—was receiving bulk corn syrup, which was then metered into cook kettles. Further, we recently installed facilities to receive sugar in bulk.

It was then that we re-examined the factors of our operation and asked ourselves: "Why not team up the two systems for even more efficient handling?" And tough though this might appear, we found a beautiful solution (see flow diagram).

Instead of independently pipe-delivering corn syrup and pneumatically-conveying about 90% of the sugar into cook kettles, we devised a special system for preparing a master pre-mix—a supersaturated solution (77.2 Brix) of sugar and corn syrup. Then we pumped the syrup directly to kettles through stainless steel pipelines adding, as needed, corn syrups from previously-installed supply lines.

Remaining 10% of the sugar—for spot-use—is pneumatically handled in dry form by portable bins. It's employed, in certain cases, to make adjustments to the master pre-mix at candy-cook stations.

Here's how system pays off:

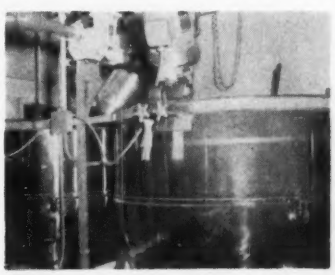
▶ **It holds down costs.** Cook-kettle operators simply meter in pre-mix. They don't have to worry about how much sugar and then how much syrup must go into kettles. And they don't have to lug around bags of sugar and scale them in manually.

▶ **Downtime is minimized.** Blended pre-mix is ready for operator to use. And since the pre-mix is supersaturated, the batch cooks out faster that if we were to install liquid sugar-handling facilities.

▶ **Eliminated is the cost of installing a conveying system** to take dry sugar to the many use points.

▶ **Assured is better and more uniform control** of product quality.

▶ **Greater flexibility is provided.** Bulk of the master pre-mix is used "as is" for high-production items, like hard candy, taffy caramel, etc. However, in making marshmallows, water is needed to hydrate the gela-



CENTER of system. Kettles into which ingredients are metered, then mix-heat dissolved into supersaturated master pre-mix for cook-kettle delivery.

JUSTIN J. ALIKONIS and CHARLES L. OLSON, *Respectively,* **Research Director and Plant Superintendent Paul F. Beich Co., Bloomington, Ill.**

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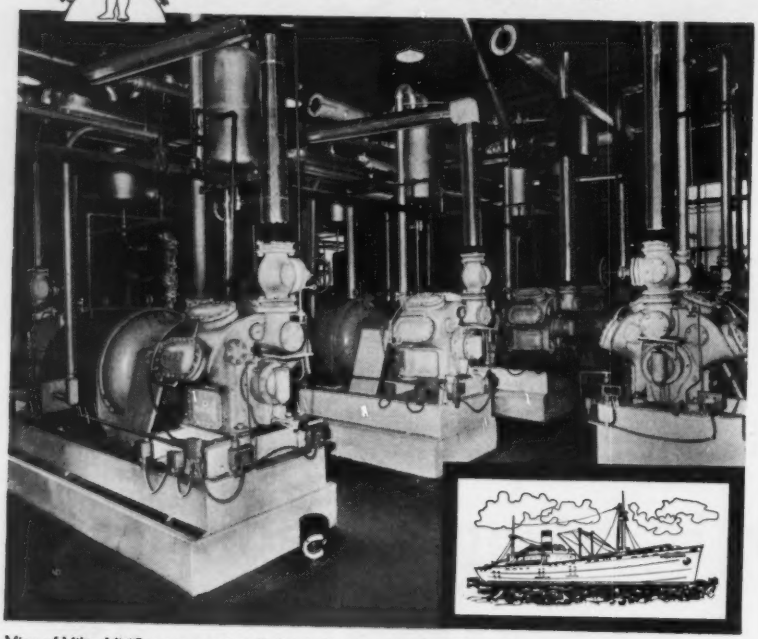
Breakfast orange juice fresh from Florida, thanks to Vilter

Tropicana Products—world's largest producer of chilled citrus and fruit juices.



View of Vilter VMC compressors installed in the Tropicana Products Plant at Port Canaveral, Florida. Inset shows the S.S. Tropicana which carries 1,500,000 gallons of chilled orange juice every eight days between Port Canaveral and New York.

The high consumer acceptance of Tropicana's orange juice is the result of a special processing and storing method. This makes possible the year-'round delivery of chilled full-flavored, vitamin-rich, orange juice over Tropicana's entire marketing area.

One key to their success is the reliable refrigeration supplied by Vilter for cooling and processing fresh juices at their various plants. Vilter equipment, at Port Canaveral, for instance, includes 16 VMC compressors, and Vilter ammonia liquid intercoolers and ethylene glycol chillers. The entire Vilter refrigeration system functions smoothly and efficiently to handle Tropicana's large daily requirements of many thousands of gallons. Refrigerated storage facilities hold 3,000,000 gallons at Port Canaveral.

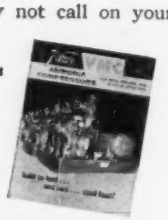
The dependable operation and efficient performance of Vilter VMC compressors is the result of continuing engineering improvements: protection against refrigerant slugs, built-in capacity reduction, precision manufacturing and factory-run-in tests.

For help with your refrigeration problem, why not call on your nearest Vilter Distributor?

Sold and installed by Vilter Distributor, W. L. Filbert, Miami, Florida

Vilter® refrigeration air conditioning

Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.



Write for Bulletin 817 to The Vilter Manufacturing Company, Dept. E-901 2217 South First Street Milwaukee 7, Wisconsin

tin. Then, we're able to adjust the pre-mix to suit our formulas.

Here's the working routine:

Airslide RR cars (100,000-lb. capacity) are pneumatically unloaded into an enclosed surge hopper at an operating pressure of 5 to 6 psi. From here, a series of worm-screw conveyors and bucket elevator take over, feeding the sugar first into a carbon-steel, plastic-lined 3,000-lb. surge tank and then into a 600,000-lb. unit.

Flexibility has been engineered into the conveying system. When it's not unloading, it's employed, along with unloading screw-conveyor, to circulate sugar within the storage bin (to prevent caking trouble) and to re-fill the surge tank.

On the 1st floor we have two 300-gal. stainless steel, steam-jacketed kettles (Groen) with vertical, propeller-type agitators (Lightning). To make 3,000-lb. batches of pre-mix in either of these kettles, operator meters in (Liquid Control pushbutton unit) the required water and corn syrup. Sugar is worm-screw conveyed from surge tank into scale hopper (1,800 lb.), from which it's automatically weighed into kettle by Fairbanks-Morse Printomatic scale.

The latter scale is dial pre-set, and when desired sugar weight is charged into scale hopper, dial indicator interrupts light beam to photoelectric circuit to automatically stop feed screw. Sliding gate opens to charge scaled sugar into kettle.

Operator uses pushbuttons to start kettle's agitator and deliver steam into jacket. Batch is agitated and heated within 15 min. to 185F.

A 7½-hp. positive-displacement pump then delivers pre-mix through pipes, with electric heating cables, to 4th-floor insulated holding tank (4,500-lb.). From here, a 2-hp. pump circulates 155F. pre-mix through 200-ft. of stainless steel pipeline at a 15 to 20-gpm. rate for metering into 18 cook kettles (50 to 300-gal. capacities). Pre-mix is also gravity-fed from holding tank to 8 gas-fired kettles (50-lb. cap.) on 3rd and 4th floors.

A word on other 10% of sugar:

Tapped into 600,000-lb. bulk storage tank is an air-conveying system (Fluidizer). System employs 15-hp. blower that pneumatically delivers 50 lb. of sugar per minute through aluminum pipes and into 4th-floor supply bin (2,000-lb.). From here, sugar is charged into 400-lb. tilt-type portable bins for handtruck delivery to various cook stations. —*End*

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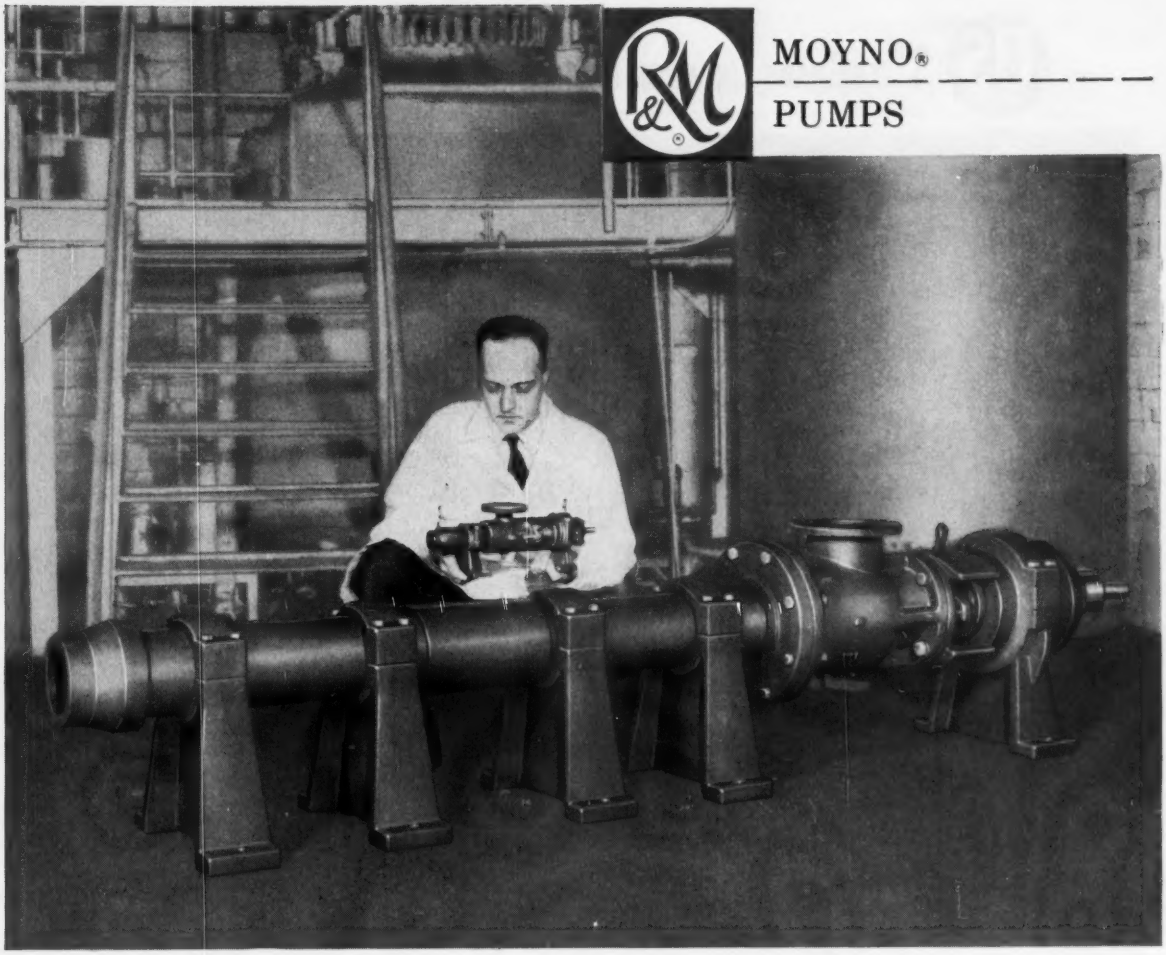
PUMPS



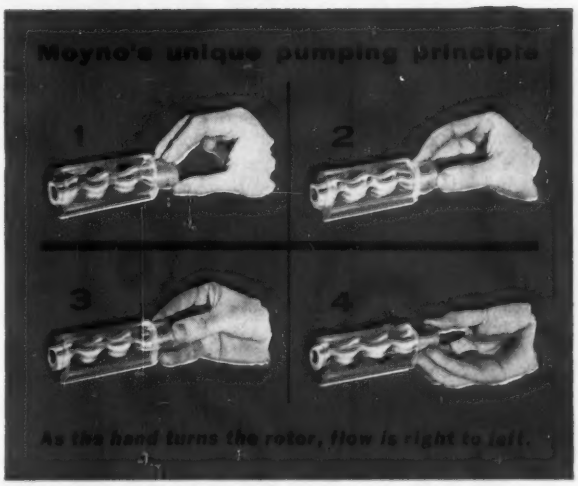
MOYNO® PUMPS

capacities: from 1/100 to 500 gpm
pressures: up to 1000 psi

MOYNO pumps are available in nine sizes with capacities ranging from minimum metering flow to 500 gpm and pressures from zero to 1000 psi. Positive displacement delivers uniform discharge without pulsation, agitation or turbulence. Solutions ranging from thin watery slurry to extremely viscous paste, corrosives, abrasives and even solids in suspension are economically handled without excessive pump wear.

MOYNO'S unique *"progressing cavity"* principle with only one moving part and special resistant internal parts slashes pump maintenance costs on problem materials that often ruin other pumps. Almost any substance that can be forced through a pipe can be pumped by a MOYNO.

To learn how a MOYNO can cut your pumping costs, write today for Bulletin **30-FE**



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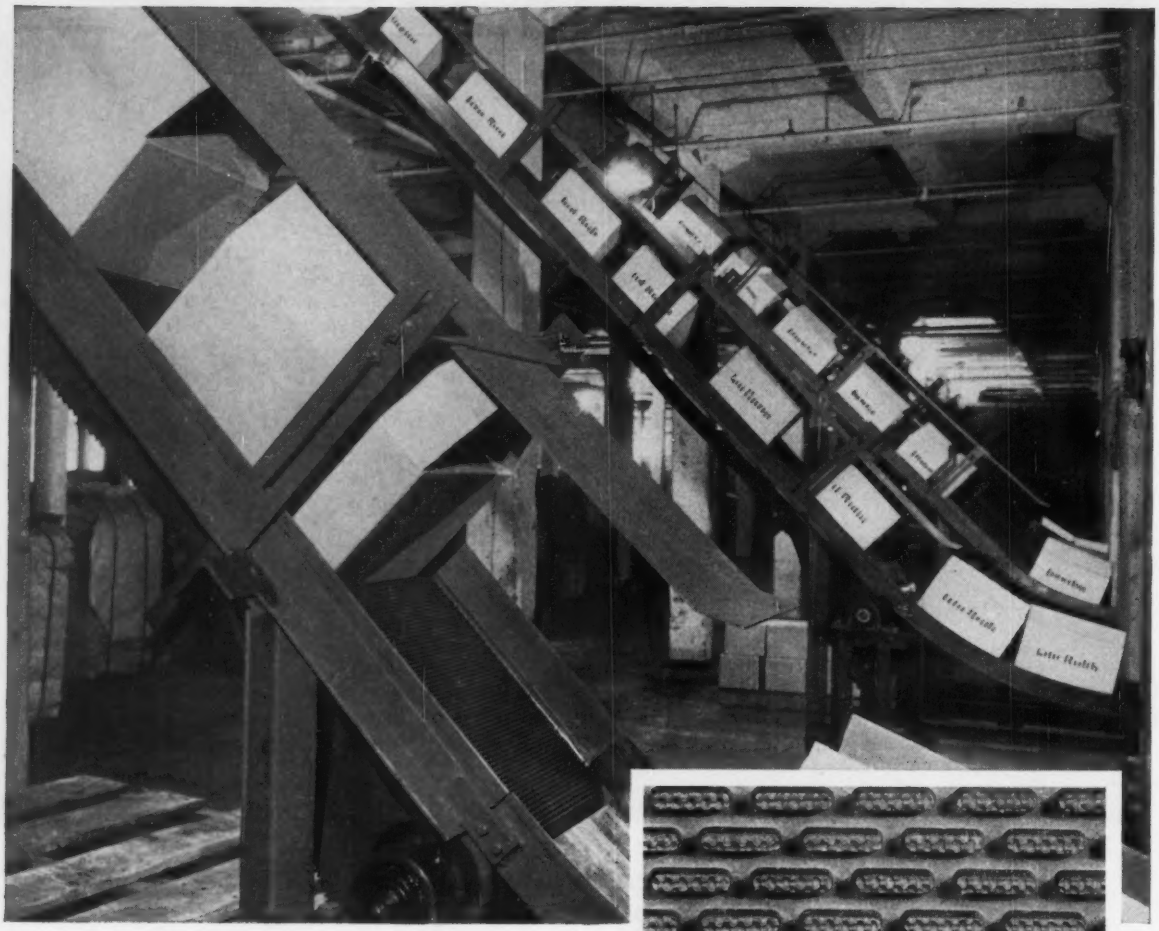
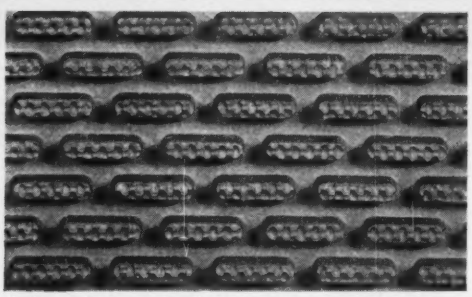
US RUBBER **STEEPGRADE CONVEYOR BELTING**





Exclusive "gripper cleat" construction means the cleats are *not* attached or cut in; they are *molded*—a true and integral part of the belt—and cannot be torn off by heavy boxes.

Whatever became of Gravity?

It's hard to believe that these cartons are not nailed down to the U. S. SteepGrade Belts, so steep is the angle of descent. The scene is the American Can Company's plant in Baltimore, Md., and these light, smooth-finished cartons are being carried at an angle of 45 degrees—*with no slippage*. The sharp angle is necessary because existing floor beams and walls limit the space.

Before the installation of U. S. SteepGrade Belts (there are 10 in all) the cartons went down chutes. This often caused pile-ups at the bottom, with spilled cans, broken cartons and lost tempers. But SteepGrade now offers controlled descent, with cartons evenly spaced. Exclusive "gripper cleat" construction holds the cartons firmly—even at steep, gravity-defying angles—thereby saving valuable floor space, conveyor length and belt footage.

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Ram-Filling That's Gentle

Whipped-potato concentrate is so light and fluffy that ordinary packing methods fill cans only to 40% of desired weight. Insurance of proper sealing has called for ramming the product into cans. Problem: Not to crush the delicate product, yet to measure correct quantities.

Instant Potato Div. of New Era Potato Chip Co., Detroit, has solved this poser by filling through 16-in.-long tubes—"can extensions"—of Cadco cast acrylic plastic, then packing the product into the can by a stainless steel ram sliding inside the tube.

Operators observe the ram action through the transparent tube, assure that pressure is evenly applied, no particles are crushed. Full product weight is achieved by volumetrically filling to indicated level on the tube.

Cast acrylic tubes are shatter-resistant, sanitary, tasteless, odorless, and resistant to food and other chemicals.—*Plastic & Chemical Co., Detroit.*

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Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

Cost-cutting disposable box.

Room for sample bag.

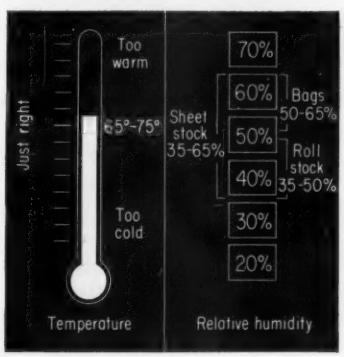
New Box Saves $10,000 Per Year

Boxes used for shipping test samples from 460 domestic and foreign plants to Royal Crown Cola Co.'s central testing laboratory posed these costly major problems:

1. It was a permanent box, and its return shipment to the plants (empty) was expensive.
2. Pads and 18 board inserts used to separate bottles often caused considerable breakage.
3. Boxes were so fragile that, when loaded, they couldn't be shipped by Parcel Post, the least expensive way.

Answer came when Royal Crown employed Union Bag-Camp Paper Corp. to design this new disposable shipping container—which has cut total costs by $10,000.

It's a special corrugated box with only two inserts. Set into the die-cut holes of the two inserts, bottles are arranged circularly in the box. Cross bracing holds them firmly in place, obviating side or bottom padding and assuring safe delivery. Space is also provided (right photo) for a small sample bag of sugar. — *FE Staff*



Winter-Season Precautions For Care of Cellophane

Like many other materials, cellophane is affected by extremes of temperature and moisture. Here are a few simple precautions for winter storage, machine handling, and shipping of the film to keep it as flexible and as durable as when you first received it.

Storage: Always maintain indicated temperature and humidity conditions in storage rooms.

Store corrugated cartons, inner cartons, pads, separators, labels, etc., with or under same conditions as cellophane. This prevents them from sucking up moisture from the cellophane.

Store the film in original wrappers.

Machine Handling: Warm up all rolls a minimum of 48 hr. at operating room temperatures.

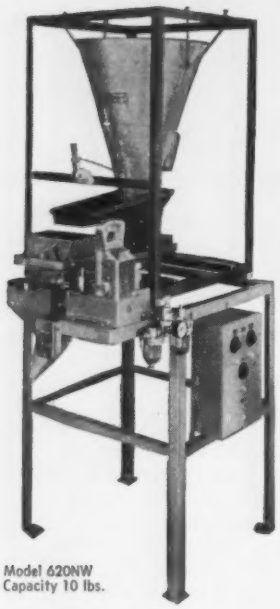
Rewrap rolls in original materials if they are to be set aside more than a few hours. This prevents moisture pickup at edges.

Pay particular attention to stock rotation. Use FIFO plan—first in, first out.

Rolls found to be loose and telescoped at edges upon unwrapping should be aligned at edges immediately. Upon reaching equilibrium with room temperature and conditions, rolls become firmly set and uneven edges can no longer be adjusted.

Shipping Finished Packages: Store

EXACT WEIGHT® Automatic Net Weighing Machines



Model 620NW
Capacity 10 lbs.

FOR PACKAGING, BAGGING, BATCHING, COMPOUNDING

Exact Weight offers:

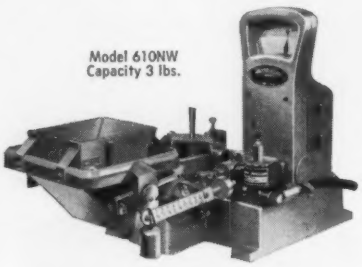
- Precision industrial-type scale
- Over-under indicator visual check eliminates need for separate checkweighing operation.
- Calibrated adjustments with counterweights of known value; graduated beam, poise and scale indicator.
- Design backed by 45 years of experience in specialized weighing equipment.
- Readily accessible service facilities.
- Performance guaranteed in writing.

Machine weighs and feeds dry, free-flowing materials. It weighs accurately and fast . . . eliminates guesswork . . . helps cut production costs. Write for Bulletin 3318 for details and specifications.

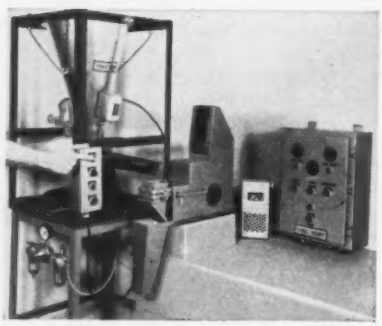
Automatic Net Weigher

Net weigher can be supplied without the feeder machine, support frame and discharge chute. The unit may be adaptable to your specific operation. Write for Bulletin 3311.

Model 610NW
Capacity 3 lbs.



Precision Automatic Net Weighing Machine



Model 4601 NW, left, for weighing dry products with accuracies of 1/10 gram on quantities below 10 grams and one percent accuracy on quantities of 10 grams and above. Combines a high-accuracy Shadograph Scale, air-operated dump mechanism, hoppers, vibratory feeders and photoelectric controls. Models with capacities from 50 grams to 500 grams. Write for Bulletin 3363.

THE EXACT WEIGHT SCALE CO.

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Exact Weight SCALES

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BETTER QUALITY CONTROL . . . BETTER COST CONTROL

Practical Ideas

packages of moist product a day or two before shipping. Product moisture adds to moisture–and durability –of converted cellophane.

Ship dry products in cellophane as soon as possible after packaging.

Delay shipments when temperature hits 0 deg. F., unless heated transportation is used.

Advise retailers or distributors to allow cold shipments of cellophane-packaged products to rise to room temperature before unpacking. — *"Converter Digest," E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.*

Space-and-Handling Solution

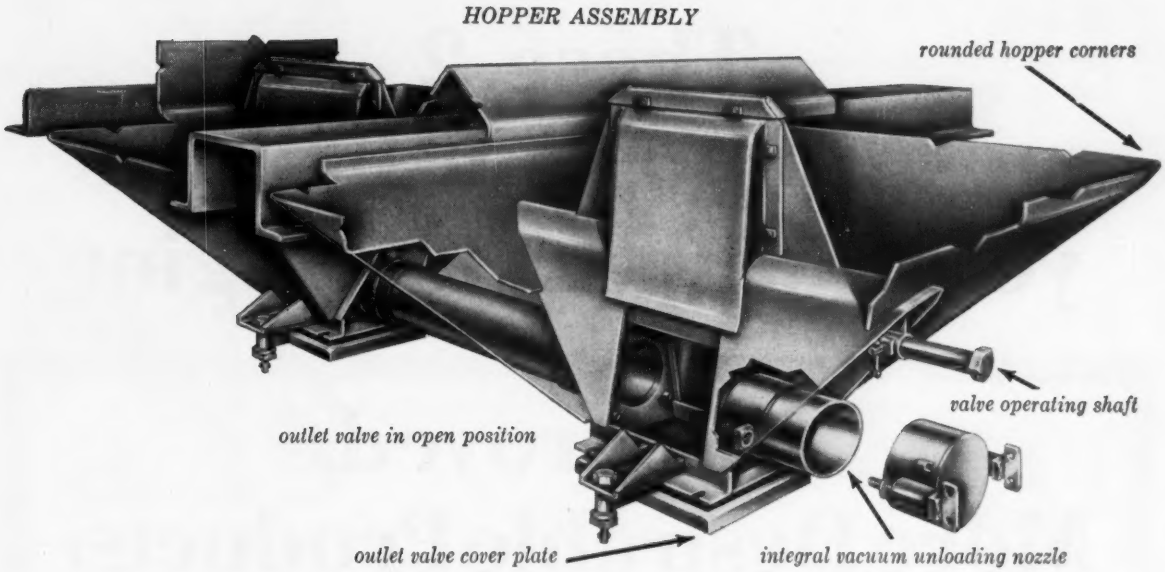
Double problem at Pioneer Ice Cream Co. (Div. of Borden Co.), Mineola, L. I., was (1) getting capacious and most efficient refrigerated storage space for annual channeling of some 3 million gal. of product, and (2) working out fast, foolproof handling of the goods.

First, the space objective was met by recent construction of a storage facility having 17-ft. vertical clearance and thus accommodating three tiers of palleted product.

Second, a special handler (an Automatic Transveyor) is speedily and efficiently caring for in-and-out movement of goods. It's a 2,000-lb. unit (photo) mounting the new Skylift mast, which has a lift height of 144 in.

This equipment uses special hydraulic fluid and lubricating oil to insure smooth mechanical functioning in the sub-zero conditions. Further, its rams are chrome plated to curb pitting and rust. And it's undercoated and sprayed with corrosion-resistant paint.

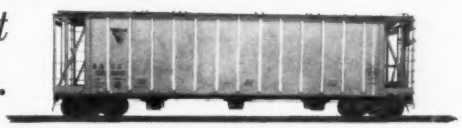
Also, addition of a limit switch assures automatic stopping of the



PROTECTED UNLOADING GATES OF DRY-FLO* CAR KEEP LOAD SAFE FROM CONTAMINATION

Unloading gates of the DRY-FLO car are entirely within the car insuring ease of operation and eliminating pickup of foreign material. Gates open and close vertically and are not subject to pressure from within. The rate of flow of product through the unloading gates can be adjusted as desired.

The DRY-FLO car is ideal for bulk shipment of dry ingredients, particularly products that *must be protected* from contamination.



COMPETITIVE IN PRICE WITH OTHER COVERED-HOPPER CARS—DO SO MUCH MORE

*Patent Rights Reserved

AIRSLIDE & DRY FLO CAR DIVISION

GENERAL AMERICAN TRANSPORTATION CORPORATION

DRY-FLO GENERAL AMERICAR TRADE MARK

135 South LaSalle Street • Chicago 3, Illinois
In Canada: Canadian General Transit Co., Ltd., Montreal
Offices in principal cities

CIRCLE 85 ON READER SERVICE CARD 85

These 2 most important benefits yours with Kelco Algin:

1. Improved, More Desirable Products:

For greater consumer satisfaction, more consumption, faster repeats, more sales. Less than a teaspoon of Kelco algin per pound of food product produces high volume whip, easier mixing, more tender texture, and retarded weeping (syneresis). Foods look better, taste better, stay fresh longer.

Kelco algin give desserts, meringues and chiffons, made from pre-packaged dry mix, a smoother, creamier texture. Preparation is easier, desserts stay fresh longer.

Kelco algin colloids produce uniform and stable emulsions of superior flavor release, improved consistency, smoother texture and far longer shelf life.

Kelco algin in fruits for pie fillings effectively stabilize the fruit and fruit juices. Boil out during baking is minimized, weeping or syneresis is retarded and pies stay fresh longer.

2. Dynamic New Selling Points:

For more powerful and compelling advertising to generate greater sales. Food manufacturers using Kelco algin products as their vital new ingredient feature the major product improvement in their advertising. Measurable sales increases are effected!

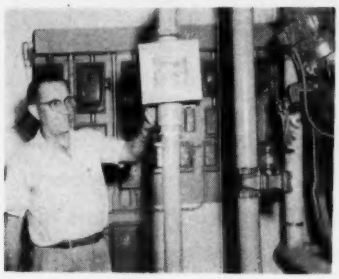
YOURS ON REQUEST: Free samples of Kelco algin, and Technical data describing properties, advantages and uses.

Products of Kelco Company

120 Broadway, New York 5, N. Y. • 20 N. Wacker Drive, Chicago 6, Ill. • 530 W. Sixth St., Los Angeles 14, Calif. • Cable Address: Kelcoalgin—New York

mast's ascent when it reaches second-tier height.

This is a special safety measure to prevent a load from hitting overhead structural members. When load is clear, a dashboard button raises mast to full height.



Transparent Guard for Gage

We spotted a hazard—possibility of injury in event of a rupture in the sight-gage section of a 3-in.-dia. pipeline delivery 190F. sugar syrup mix at our plant.

To obviate it, we installed this see-through enclosure (photo) over the gage. It comprises a 10-in.-sq. frame fabricated of thin sheet metal and covered by transparent Lucite on all four sides.

The gage was installed in the line at eye level so the operator wouldn't have to mount a platform to make his checks.

The operator now simply sights termination of flow when kettles are empty, then shuts off pump.—*Justin J. Alikonis, Director of Research, Paul F. Beich Co., Bloomington, Ill.*

PRACTICAL TIPS

To conserve compressed air, follow these 6 points:

1. Employ 2-stage compressors, cutting off single-stage units first as load decreases. Use low-pressure units alone if high pressure not required.

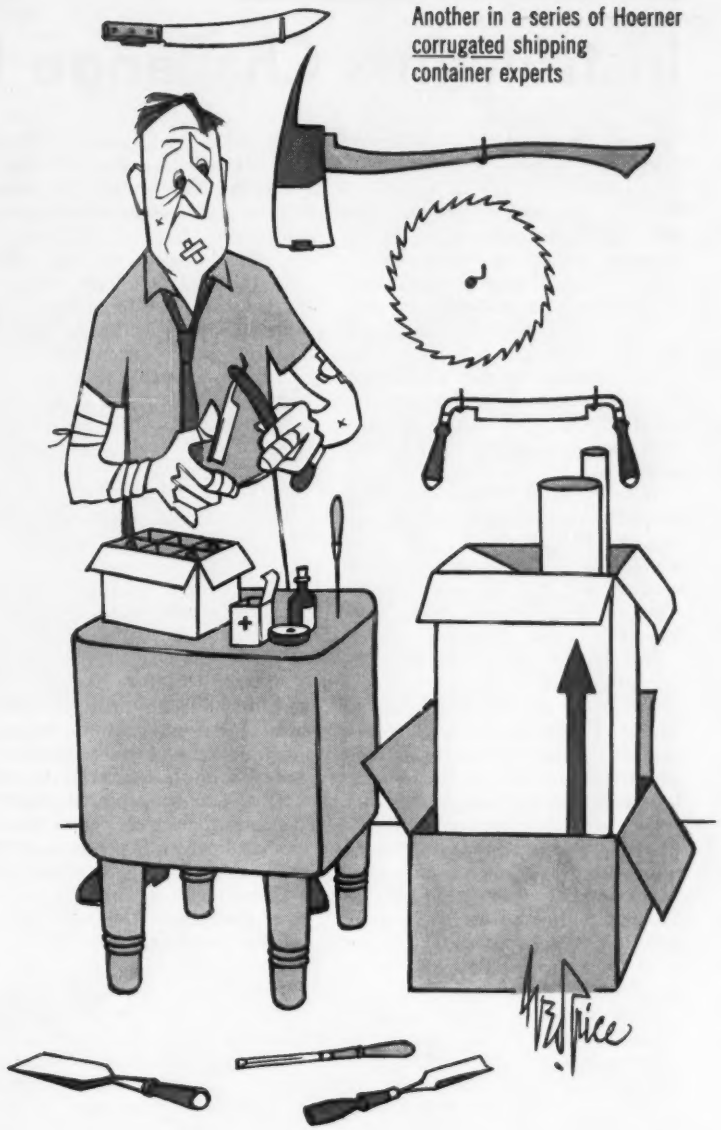
2. Since leaks increase as square root of pressure, maintain pressure at minimum and reduce it further on weekends.

3. Install receivers and compressor suction inlets in coolest possible locations.

4. Keep inlet filters clean.

5. Employ ample pipe sizes to avoid pressure loss.

6. Use separators and moisture traps.



THIS IS THE HOERNER SPECIALIST FOR PACKAGING SHARP THINGS

He has his problems. But he always solves them with ingenious use of corrugated. He solves problems for manufacturers, too. Cuts out excessive shipping material and labor costs. Whittles shipping damage down to nothing. If packaging and shipping problems are slicing your profits, call the nearest Hoerner Office.

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CIRCLE 87 ON READER SERVICE CARD 87

Instruments Challenge Foodmen

WHAT food technologists say they'd like to have in advanced instrumentation *already* is available.

▶ In fact, the answers to their pleas have just been exhibited by the Instrument Society of America—as revealed in our 3-page photo feature beginning on the next page.

The very promising potential was spotlighted by Lloyd E. Slater, executive director of the Foundation for Instrument Education & Research, speaking at the recent ISA workshop session on food process control.

But impeding action, he said, is insufficient cooperation in field trials and unwillingness to pay for engineering modifications needed to put many of the techniques on stream. That, he emphasized, is the challenge to the food industry.

Roy E. Morse, head of the food science school at Rutgers U. and chairman of the Food Division of ISA, cited a survey showing that food scientists and executives chiefly identify instrumentation needs with better *continuous measuring* techniques, particularly those involved with food quality. In general, the desired techniques were mentioned in this order: (1) Foods in formulating, (2) fat-in-liquids, (3) moisture content, (4) specific gravity or density, (5) protein content, (6) flow of viscous foods, and (7) food flavors.

FIER's Slater countered with manufacturers' listings of new equipment and techniques possessing enormous food possibilities. For example: (1) The Coulter counter principle for particle sizing, moisture measurements and, possibly, protein determinations; (2) radioisotope-gaging for density, uniformity, fill, moisture, protein, etc.; (3) gas chromatography for flavors; (4) electromagnetic flowmeters for viscous foods; (5) dielectric probes for moisture; (6) strain-gage techniques for continuous blending; and (7) NMR techniques for moisture and fat contents.

Coping With Variables

It was the view of R. T. Milner, U. of Illinois, that the food industry must search deep within its processes to reveal and evaluate the important variables that must be measured and controlled. Here, diversity of food products poses a major problem.

For the near future, said Milner, look for new ingenuity with present instruments. Example: Refractive index, long used to measure soluble solids, content of liquids. Recently, the familiar Abbe refractometer has been built into kettles for continuously checking concentrations even of highly colored viscous materials (also see FE Sept.'55,p.68). Moreover, refractometers are recording refractive-index changes of outflow of continuous liquid-liquid extractors.

Further, a plant instrument could be made for recording and controlling evaporation of juices and hydrogenation of oils. And there are many other instances where instruments can be adapted for plant use.

The more distant future, he continued, will require really creative imagination, along these two parallel paths: Food scientists and engineers must determine the properties responsible for, or related to, the characteristics to be measured. And the instrument designer must develop means of measuring, recording and, perhaps, controlling the properties.

Color, texture, and flavor offer great challenges. Here, we have depended largely on subjective tests.

Among devices are the shear-press type tenderness gages. Other means than shear have been sought for checking tenderness. For some products, specific gravity units seem satisfactory ("sink or float" methods). But for many products, correlation with *chewing* tenderness remains elusive.

An imaginative effort is the denture tenderometer—human dentures simulating mouth action with stress recorded by strain gages. It's now a research tool, but from it may come an instrument for quickly and objectively grading foods. Such a device, measuring value to the ultimate consumer, would enable the processor to compensate for variations. It could give real meaning to the terms "Fancy" and "Prime."

Perhaps flavor is even more important. Primary here is chromatography (FE July, p. 77). Instance: From a natural strawberry flavor, over 30 compounds have been isolated identity of many of them still unknown. Where identity and amount of every flavor component is actually known, a mixture of only a few may give an authentic strawberry flavor. We have, for the first time, the requisite tools—gas-liquid chromatography, mass-spectrography, and infra-red spectrophotometry.

ISA 'workshop' speakers pinpoint problems and opportunities . . . Expert declares that sophisticated controls which industry seeks are available today, as positively . . . . . .

Re other applications, citrus fruits are now color-sorted automatically, and peaches and apples are being studied for such grading. The technique has potential for other foods.

Instrument Program Needed

F. W. Velguth, Corn Products Refining Co. advised special care in presenting instrument programs to management. Stress economical justification, he said—as (1) savings on process equipment, (2) reduced manual attention, (3) conserved ingredients and reagents, (4) lower maintenance costs, and (5) added profits.

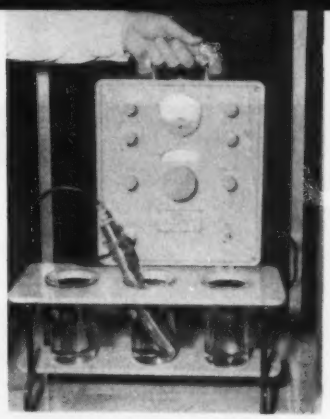
Velguth declared that a process must be dynamically analyzed (instrumentally tested and mathematically checked) before measurement and control setups are developed. For this averts the misfit or misplaced installation, reveals the poor approach before it's tried.

Clearly exposed during the ISA session was the gap remaining between food technologists and process-control engineers. It was pointed out that much progress awaits the day when there are more food engineers who've studied *both* engineering and the biological sciences related to foods.

Slater called for food firm-supported graduate fellowships in instrumentation to speed the arrival of this much-needed hybrid.—*FE Staff*

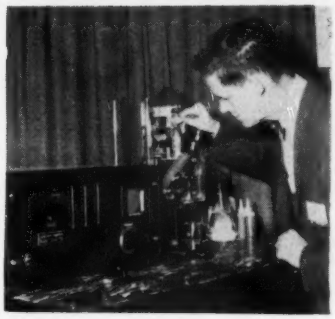
◀RECORDER measures pH directly from electrodes without use of intermediate amplifier. Unlimited range adjustment for all spans over pH 3.0.—Foxboro Co., Foxboro, Mass. (307)

CAPACITY INDICATOR evaluates ▶ dielectric constant. Its portable unit adaptable for measuring moisture content in batch or continuous processes.—Foxboro Co., Foxboro, Mass. (308)



18 Advanced Process Controls

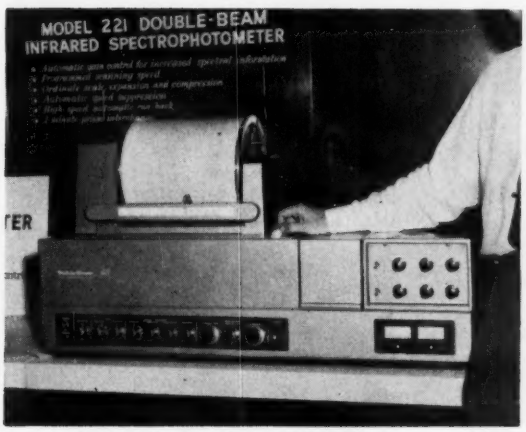
. . . . . demonstrated in this special ISA display of new analyzers, flow & batch units, temperature instruments, and recorder-controllers



COUNTER measures number and size of particles. Works on principle of changing resistance between electrolyte-immersed electrodes producing voltage pulse proportional to particle volume. Pulses are amplified, scaled, and counted. On-stream use for process control cited.—Coulter Industrial Sales Co., Elmhurst, Ill. (309)

CHEMICAL ANALYZER quickly performs repetitive lab determinations, is also suitable for continuous stream monitoring. It simultaneously proportions 8 streams (sample, air, and reagent), then combines them (by mixing coils) for feeding to other modules that process for colorimetric analysis.—Technicon Controls, Chauncy, N. Y. (310)

First, 9 Analyzers

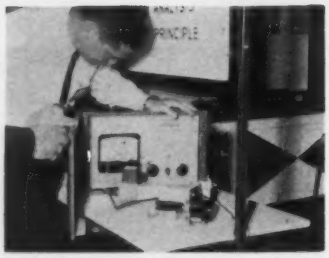


INFRA-RED SPECTROPHOTOMETER is flexible double-beam unit. Handles broad range of analyses from routine identification of chemical composition to complex quantitative determinations of multi-component mixtures. Instrument automatically cycles over any selected wavelength. Recording pen repositions at each cycle.—Perkin-Elmer Corp., Norwalk, Conn. (311)

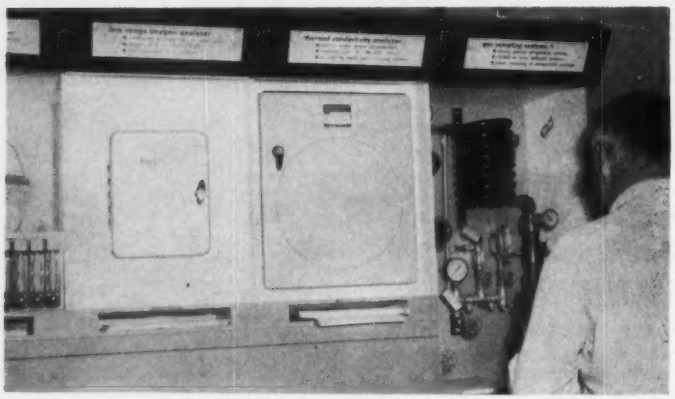
CHROMATOGRAPH speedily analyzes gases (possible volatile flavors). Adaptable for plant stream analysis and process control, it has timer controlling all functions in complete analysis cycle. Instrument comprises analyzer, control with programming timer, and strip-chart recorder.—Greenbriar Instruments, Ronceverte, W. Va. (312)

Advanced Process Units (Cont'd)

ON-STREAM REFRACTOMETER measures differential refractive index correlated to chemical composition. Unit's highly sensitive.—Greenbriar Instruments, Ronceverte, W. Va. (313)

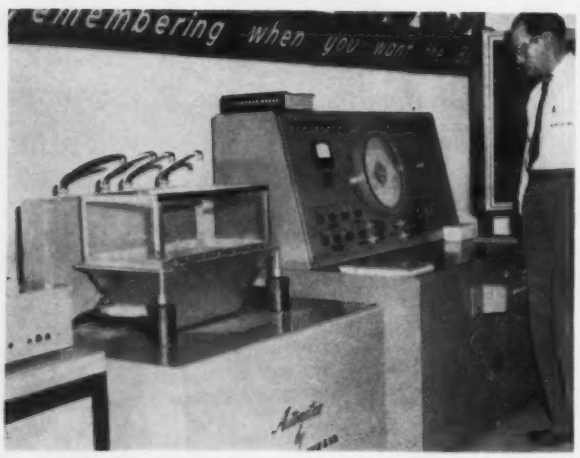


PROCESS REFRACTOMETER measures soluble-solids content of liquids. Used in research or production to control batch or stream processing or product quality. Sample's refractive-index variations relative to standard are detected by cadmium sulphide photocell circuit.—Mine Safety Appliances Co., Pittsburgh. (314)



THIS ANALYZER is thermal-conductivity type for measuring CO_2 and other gases. It employs moisture-sensitive resistance element to compensate for variations in water-vapor content of gas. Electric signal proportional to percent measured gas is transmitted to remote recorder.—The Hays Corp., Michigan City, Ind. (315)

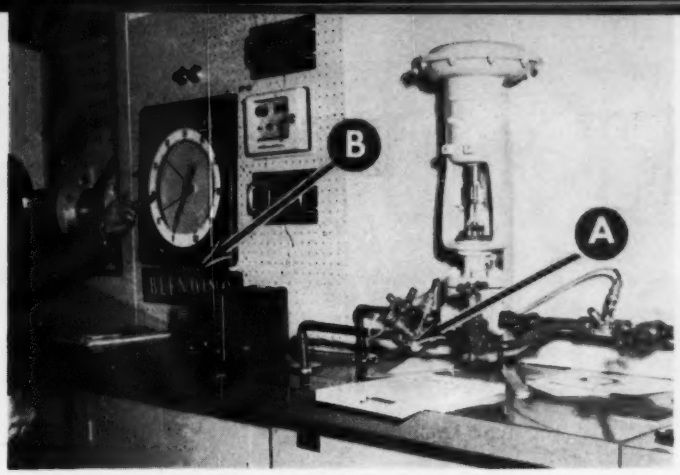
4 Controls for Level & Flow



BATCH-CONTROL SYSTEM weighs liquids piped into hopper (foreground). Electronic unit functions by converting force on load cells into electric energy that's cabled to remote instrument panel (rear) having controls for presetting formulas. —Fairbanks, Morse & Co., Chicago. (317)

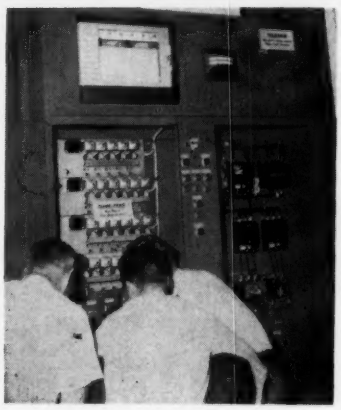
CONTROLLED-VOLUME PUMP precisely meters dense slurries at 180 gpm. against pressures up to 90 psi. Keeps suspension in slurries containing up to 60% solids by weight. Pump comprises two opposed chambers separated by slack diaphragm.—Milton Roy Co., Philadelphia. (316)

MASS FLOWMETER measures liquid or gas flow directly into pounds. Operates accurately over wide ranges of flow rate, pressure, temperature, and density. Electric pulses representing fluid weight can run counters, printers, and totalizers. — General Electric, Schenectady, N. Y. (318)



RATIOMETER maintains pre-set flow ratios despite changing rates. Accurately blends products for taste, color, and consistency on continuous basis. Employs turbine flowmeter (A) and ratiometer (B), also a self-balancing potentiometer controller and control valve.—Bowser Inc., Union, N. J. (319)

3 Temperature Instruments



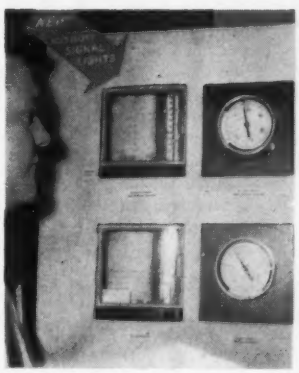
PYROMETER, of low-range radiation type, hooks to recorder-controller. It converts radiant energy focused on thermopile into electrical signal that's fed to instrument.—The Bristol Co., Waterbury, Conn. (320)

COMBUSTION-GUARD UNIT monitors each burner pilot flame, automatically de-energizes safety shut-off valve. Through rectification principle, a.c. is flame-rectified, providing d.c. signal to elecrtonic circuit. —Protection Controls, Inc., Chicago. (321)

RADIATION THERMOMETER measures and controls temperature of moving or stationary objects without contact. Operates on infra-red detection principle to give rapid, accurate response.—Radiation Electronics Co., Chicago. (322)

2 Recording Control Units

RECORDER-CONTROLLER features high-and-low alarm lights. They're fitted behind chart, making alarm equipment an integral part of control station.—Moore Products Co., Philadelphia. (323)



ANALOG COMPUTOR continuously monitors temperature, pressure, flow, etc., where one or a number of relatively small systems are controlled. Signals modulate control elements. — Hagen Chem. & Controls, Inc., Pittsburgh. (324)

GET 300%* MORE USEABLE PRODUCT PER HOUR

Full 360° screen is an exclusive Stokes feature. Shown are two of the many screen sizes available.

in granulating
pulverizing
mixing
shredding
pulping
chopping
dispersing
recovering...
a wide range of wet and dry food materials

with the STOKES TORNADO MILL

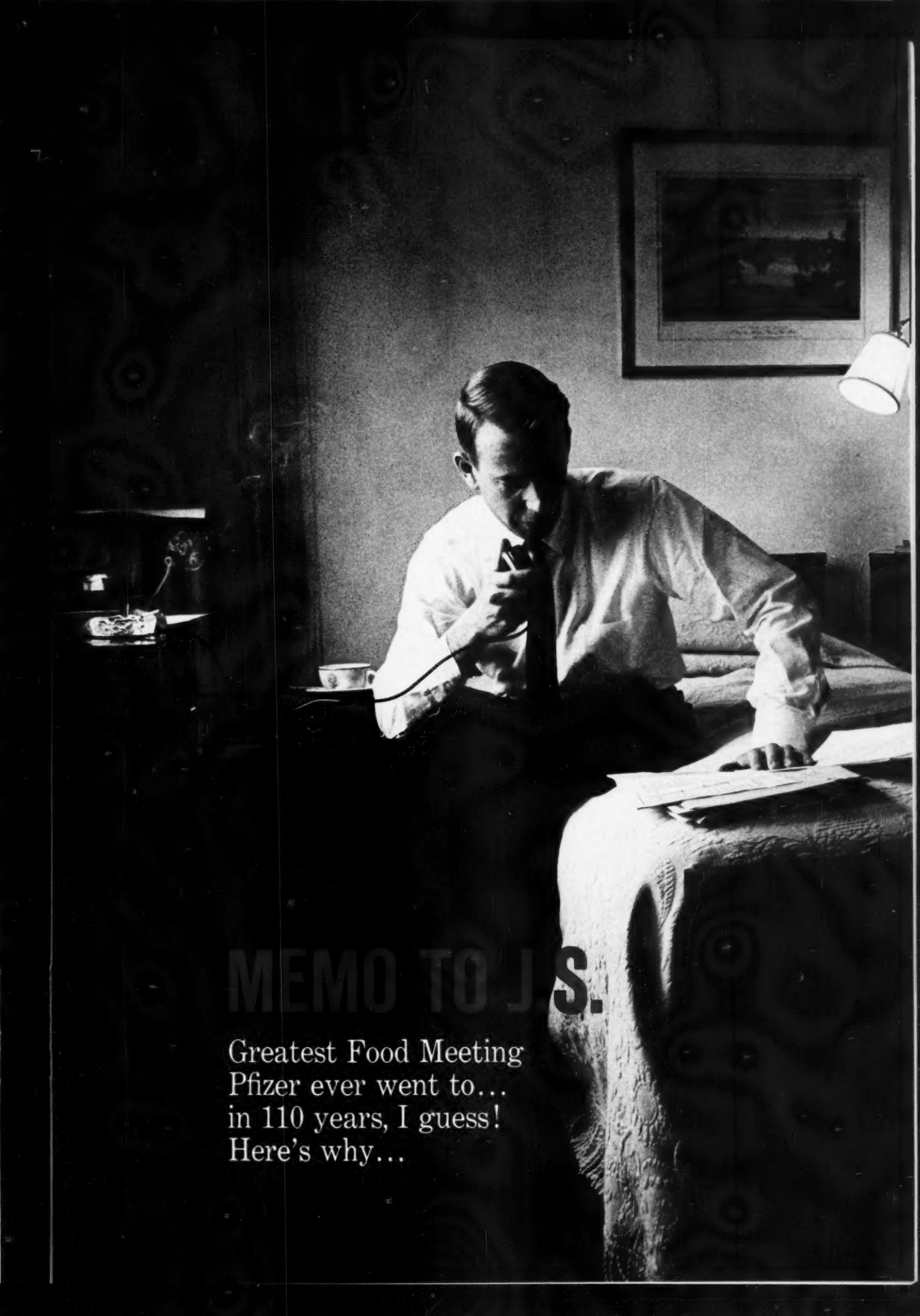
More and more food processors are finding Stokes Tornado Mill provides outstanding performance and versatility. Its exclusive 360° screen assures an average of 300% more useable material per hour... resists clogging even in processing wet and sticky materials. What's more, no special treatment is required for heat sensitive material. For thorough cleaning, the entire grinding chamber, including rotor and blades can be completely disassembled in a matter of minutes. All contact parts are fabricated from stainless steel to guard against contamination. With the Tornado, you can switch from one product or operation to another easily and quickly.

For complete details, including specific performance comparisons on typical materials, write today for Bulletin 350.

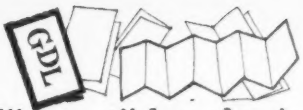
**Average, based on processing of dry granulation*

Process Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES


MEMO TO J S.
Greatest Food Meeting
Pfizer ever went to...
in 110 years, I guess!
Here's why...

As you know, this is one of our top food conventions of the year. It was a real success. Our booth featured Pfizer nutritional products with the accent on Lysine and Vitamins. Sorbistat®K highlighted our preservatives section, and Glucono-Delta-Lactone our specialty products. **TO BE SPECIFIC–** *Charlie's paper on Lysine and the importance of this amino acid in improving the quality of cereal protein caused a great deal of favorable comment. Later on at the booth, we confirmed the fact that most of our customers accept the need for Lysine in cereal products.* *A big factor in the choice of Lysine over other protein supplements seems to be that Lysine does not affect the taste or texture of their finished product. After talking with many marketing men at the booth, we're certain the food industry has never been so nutrition-minded. Vitamin C fortification is snow-balling. It is increasingly clear that the food industry has found "enriched" to be a selling word—not only Vitamin C in fruit juices and beverages,* *but also B_6 and B_{12} in the breakfast cereals. You can expect half a dozen new products enriched with Pfizer vitamins in the near future. One of our top projects has been the development of markets for our baking specialty products. Two of them, Glucono-Delta-Lactone and Sorbistat®K, are really taking hold. Taking them in order, I would say we gave out more literature on GDL than any other product.*



The work of the Quartermaster Corps in developing an "instant" bread mix, coupled with the more recent activities of our Technical Service group in developing new formulas for frozen rolls, prepared cake mixes and refrigerated biscuits, had tremendous impact. The chemical leavening story plus the unique processing advantages of GDL over presently used leavening acids is going to make available some products the industry did not believe possible.

Sorbistat®K with its vastly improved water solubility has really proved a boon to food manufacturers. Technologists from the baking, cheese, prepared foods, pickle, meat, wine—in fact, practically every segment of the industry—are confirming the advantages of Sorbistat®K in reducing yeast and mold spoilage.

One of the interesting sidelights was the comment caused by the sketch we put up in the booth of the new Pfizer multi-million dollar Research Center at Groton. This was a real conversation piece. Our visitors—particularly those in research—were impressed. It is gratifying to see the number of people who realize the help Pfizer can offer in nutrition, food preservation and allied fields. For the future, there are a lot of important new developments on the way in the food industry...and I can see areas where Pfizer experience, current research and products can make a significant contribution.

See you in Brooklyn soon...

NOTE: *The man working on this report is Mr. John Post of the Pfizer Chemical Sales Division, Food & Beverage Dept. He, like many Pfizer people, attends the important food conventions taking place during the year. Perhaps you can talk over your ingredient problem with a Pfizer representative at the next convention you attend. Here is a list of the important food industry meetings where Pfizer exhibits:*

Institute of Food Technologists
Association of Cereal Chemists
Association of Operative Millers
Western States Meat Packers Association
American Meat Institute
American Bottlers of Carbonated Beverages
Master Brewers Association

PFIZER PRODUCTS FOR FOOD INDUSTRIES:

BEVERAGE

Citric Acid
Sodium Citrate
Tartaric Acid
Caffeine
Calcium Cyclamate
Sodium Benzoate
Ascorbic Acid
Erythorbic Acid
(Isoascorbic Acid)

FROZEN FOOD

Citric Acid
Ascorbic Acid
A•C•M®

DESSERT

Citric Acid
Sodium Citrate
Fumaric Acid
Ascorbic Acid
Calcium Cyclamate
Calcium Gluconate
Sorbistat®
(Sorbic Acid)
Sorbistat® K
(Potassium Sorbate)

DAIRY

Citric Acid
Sodium Citrate
Vitamin A
Sorbistat®
(Sorbic Acid)
Sorbistat® K
(Potassium Sorbate)
Vitamin A Palmilets*
Types M & W

MEAT PACKING

Erythorbic Acid
(Isoascorbic Acid)
Sodium Erythorbate
(Sodium Isoascorbate)
Citric Acid
Biostat®
(Oxytetracycline)
Sodium Citrate

CANNING & PRESERVING

Ascorbic Acid
Citric Acid
Sodium Citrate
Calcium Cyclamate
Sodium Benzoate
Tartaric Acid

CANDY

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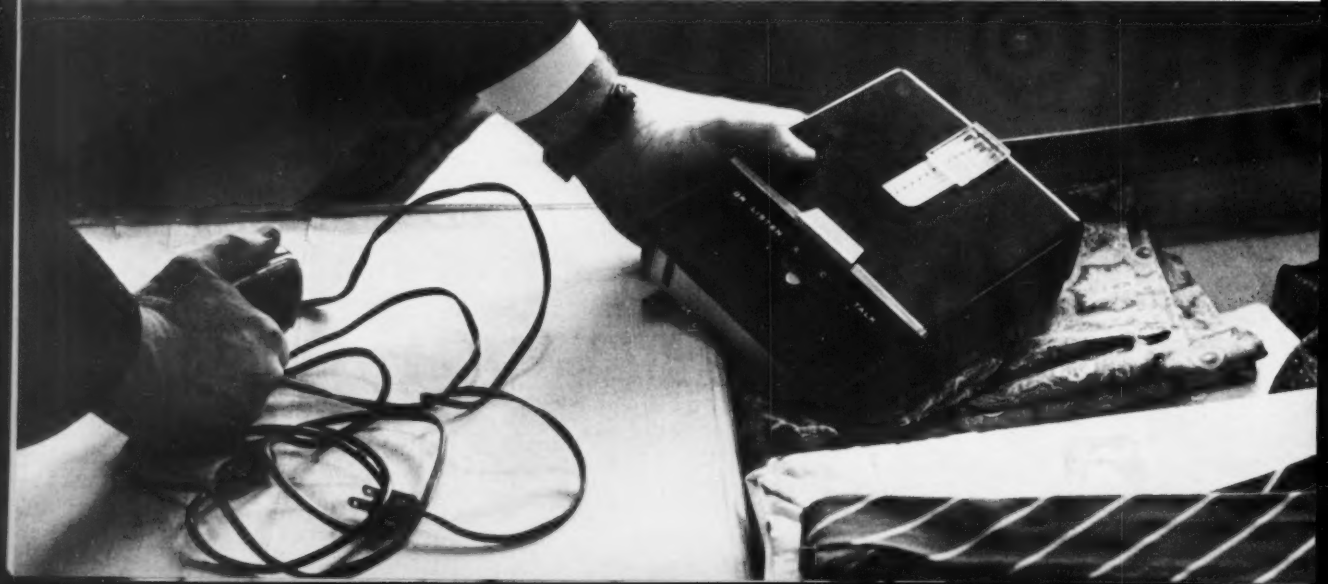

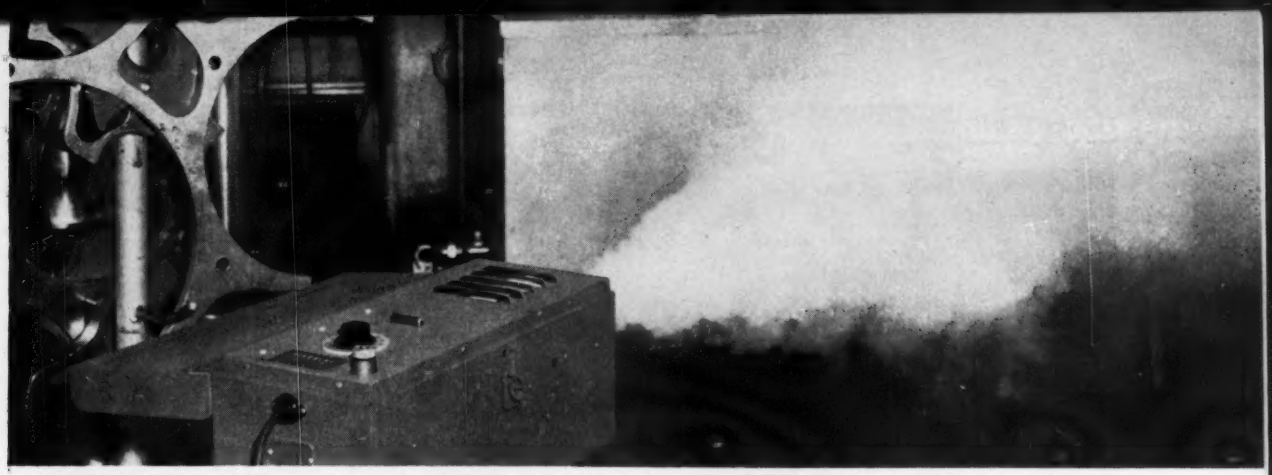

FEW SECONDS after dispenser is turned on, dry fog starts giving fast, even coverage at rates up to 10,000 cu. ft./min. Floating fog gets everywhere, leaves no toxic nor oily residues to harm products or equipment.

Fog Kills Insects Quickly

Better control achieved with simple new "dry" fogging technique that disperses insecticide into cracks, crevices, and between stacked products

INSECTICIDE USERS find four chief advantages in thermal fogging –safety, ease of handling, greater penetration into inaccessible places, and more economical coverage.

The FDA-approved insect-killer, pyrethrum with piperonyl butoxide (synergist) in deodorized kerosene base, is effective and safe to use. It is dispersed by a specially designed thermal fogger (Aero-Master, Inc.).

Since it is atomized as a "dry" fog (5-10 microns), there's no damage nor contamination of equipment or food products, no oily residues (so little fluid's used), and no disagreeable odors. No toxic residues are left, and no clean-ups are required.

Furthermore, there's no hazard from pilot lights or other sources of open flame during fogging. For any hazard to exist, almost 40 times the maximum recommended amount of fog would be required in a given area, and unit would have to run over an hour in a 2,000-cu. ft. area. (Recommended fogging time is 1 min.)

In government-inspected plants, however, foods must be removed prior to fogging to prevent possible contamination and to protect them from dropping inserts. Equipment should be covered, too.

And of course, if the plant's air-conditioned, it's necessary to turn off exhaust blowers. Otherwise, fogging effectiveness would be minimized.

Generally speaking, the fogging technique is used for space rather than spot treatment, to control. . . . Flies during summer months and roaches (when it appears necessary). For flies, daily treatment is on the basis of 1 oz. of insecticide per 5,000 cu. ft.–two or three times a day, if necessary. For roaches, fogging is carried out weekly at the same concentration on a routine basis. But if infestation appears heavy, a stepped-up dose–10 oz./5,000 cu. ft. once every two or three months–is the ticket. Then treatment's reduced to the weekly 1 oz./5,000 cu. ft.

. . . Moths, like Indian meal and Mediterranean varieties, that infest nuts, spices, chocolate, etc. Treatment involves weekly fogging of 1 oz./5,000 cu. ft.

. . . Beetles, such as confused flour and saw-toothed grain types, that get into bakery flour and macaroni semolina. Fogging's done weekly–first at the heavier and then at the lighter dose.

Creeps After Pests

In one operation, the portable unit automatically assures, within seconds, wall to wall and floor to ceiling coverage–up to 10,000 cu. ft./min. And there's no lugging the dispenser around, it's simply placed 3 ft. off the floor, and plugged in an electrical outlet after timer's set.

Dispenser gets dry fog into cracks, crevices and between stored and stacked products. In a sense, the fog creeps after pests, doesn't wait for them to come to it.

Heavy infestation may require daily treatments for 3-5 days, until insects are brought under control. A preventive program may call for weekly or biweekly treatment. But this depends upon seasonal conditions (like flies during summer), type of insects, and rate of outside re-infestation. Also, it's best is to increase frequency of treatments rather than fogging time.

How long to suspend fog. The longer the better. At least 30 min. for flying insects if dispersion's complete, and 3 hr. for crawling insects (over night's preferable).

Uses Thermal Control

The dispenser. Fogger consists of a 1- or 2-gal. supply tank with an immersed, metering-type pump and thermal head with nozzle. It operates on 110v., 60-cycle ac. Thermal head, connected to supply tank by copper tubing, contains cartridge-type heating elements. It's thermostatically controlled to maintain proper operating temperature, which controls fog's particle size.

When thermal head reaches operating temperature, thermostat activates a relay that starts pump and cycles timer. Insecticide is then pressure-pumped from tank and into heated thermal chamber through atomizing jets. Here, it is converted to dry fog that's jetted out of nozzle (with filter). When timer cycles out, power's cut off. —*FE Staff*

COLOR CHANGES in fruit spreads were determined on Hunter color difference meter, operated here by technician Elsie Berberick.

Spreads Cooled for Quality

Fruit products held at 34-36F. retain fresh flavor and color for extended periods. At room temperature, both are quickly lost

DETERIORATION in flavor and color of such products as fruit spreads can be significantly retarded by low temperature storage.

This was effectively demonstrated in recent studies, wherein nine commercially prepared preserves and jams were stored at 75-80F. and 34-36F. and checked periodically for flavor quality and hue.

Products included peach, red raspberry, blueberry, gooseberry, and strawberry preserves, and grape, boysenberry, Damson plum, and black raspberry jam. Peach and grape spreads were packaged, 1-lb. to a screwtop vacuum-sealed jar, other products 9-oz. to a jar with vacuum friction lid. Before evaluation, jars were removed from storage and allowed to equilibrate overnight at 50F.

Subjective evaluations were performed by trained panelists, previously selected for their acuity for specific fruit flavors. A paired comparison hedonic rating system—9 ("like extremely") down to 1 ("dislike extremely")—was used on spoonful portions placed before judges in paper cups. Booths were equipped with red lights to eliminate bias that would result from color differences. Results from eight panelists were averaged to obtain mean hedonic ratings for samples.

Colorimetric determinations were performed using a Hunter Color & Color Difference Reflectance Meter and obtaining tristimulus readings. Reference ceramic plates of appropriate colors were used as standards. Samples of approximately 50g. were placed in Lucite dishes for tristimulus reflectance readings. Average of five readings was taken for each storage period.

Here are the results:

Peach preserves prepared from Hale Haven variety score 7.7—between "like moderately" and "like very much"—immediately after packaging and temperature equilibration. After one month, refrigerated samples had dropped to 6.6, those stored at room temperature to 6.0. At end of 6 months, however, refrigerated samples scored 7.3, room-temperature-stored ones 6.5. Colorimetric reflectance values of 75-80F. samples decreased approximately ½ during first 6 mo., while those for 34-36F. samples remained unchanged.

Red raspberry preserves: Initial flavor score 8. After 6 mo. at 34-36F. 7.1; color—41% red lost. At 75-80F. flavor 6.5; color—81% red lost.

Grape jam: Flavor difference apparent in 3 mo. with continued high preference for 34-36F. storage. Purple color retained at 34-36F., changed to brown at 75-80F. in 8 mo. A singular effect of the so-called "artificial" or "overpowering" natural grape flavor was noted after 3 months and at succeeding evaluations. This is interesting since the jam was made using the flavor-add-back process, which incorporates stripped volatiles in final product.

Blueberry preserves: Original flavor of 8 retained for 3 mo. After 6 mo. at 34-36F. product retained flavor and blue-purple color. At 75-80F. flavor 5.1; color changed to gray.

Gooseberry preserves: Initial flavor of 7.1 and yellowish color retained at 34-36F. After 6 mo. at 75-80F., flavor 4.3 ("dislike slightly"); color—virtually black.

Seedless boysenberry jam: No flavor change at either temperature. Color: More intense purple at 34-36F.

Damson plum jam: Initial flavor of 8.2 dropped to 6.3 in 6 mo. at both temperatures. Intense purple retained at 34-36F. for 6½ mo., became grayish at 75-80F.

Seedless black raspberry jam: Initial rating of 7.6 did not change at 34-36F. At 75-80F., flavor decreased one full point in 3 mo.

Strawberry preserves: Flavor score decreases paralleled color loss. At 6 mo., 34-36F. samples scored 7.4, those at 75-80F. 6.3. Reflectance hue "a" value of room-temperature-stored samples decreased 2.3 units, while refrigerated samples decreased only 1.8 units.

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Meschter, E. E. "Color Measurement in Strawberry Preserves." *Color in Foods*, Nat. Acad. Sc., Nat. Res. Council, Wash., D. C. Nov. 1954.

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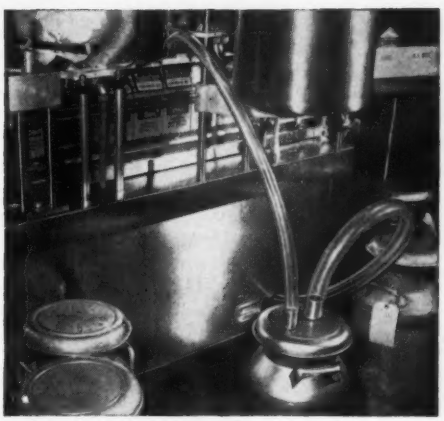

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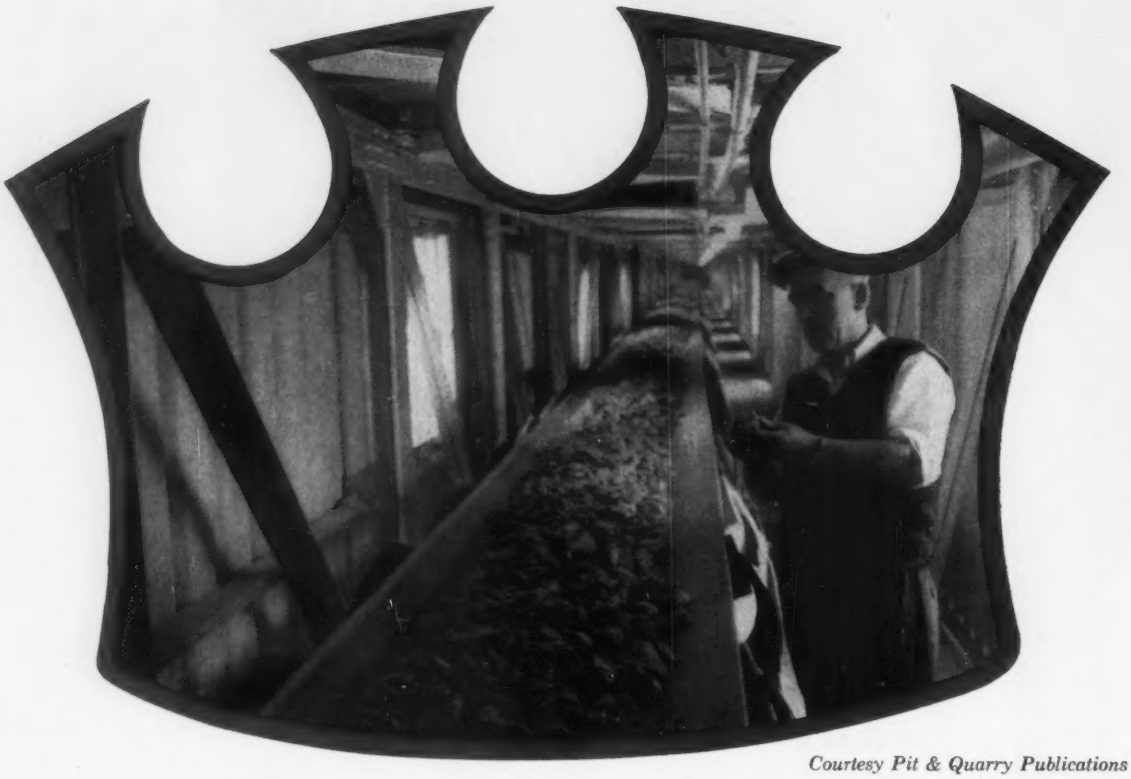

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Antibiotics Extend Shelf Life Of Prepeeled Potato Strips

Exudation of liquid from prepeeled potatoes packed in plastic bags can be minimized by addition of antibiotics to the sulfite dipping solution.

Experiments with both oxytetracycline and chlortetracycline showed that addition of 10 ppm. to the sulfiting solution was effective at 38 and 50F. when strips were packed in polyethylene bags. When Cryovac bags were used, 5 ppm. of either antibiotic were found adequate.—*Food Tech.*, 485-88, Sept. 1959.

Gaging Cocoa Butter Color

Color of cocoa butter and degree of refining given to it may be estimated by blending carefully bleached butter (snow white) in varying proportions with raw product fresh from presses.

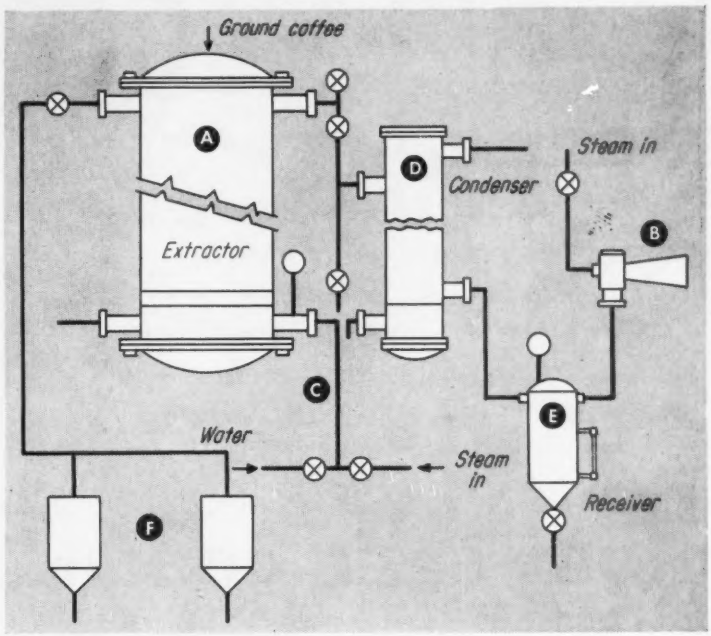
Measuring extinction of mixtures in a photo-colorimeter at 440 mmu enables a calibration curve to be prepared for judging degree of refinement of other samples. Such a curve showed that aluminum oxide and activated carbon had remarkable color-reducing powers.

After filtering fat equivalent to 100 times weight of carbon, butter was nearly 90% decolorized. Centrifugation removes about 31.5% of total color, showing that 68.5% is dissolved in the fat.—*Int. Choc. Rev.* 14(6), 250, 1959.

Making Soluble Flavor

Separating a volatile flavor from an essence containing a small amount of flavor and a major proportion of aqueous alcohol, then protecting said flavor by incorporating it in an edible product is the object of a recent patent.

In the process, flavor is extracted with a solvent in which neither water nor alcohol are soluble. Solvent is then separated from the other constituents and mixed with an edible oil. This is followed by evaporating the solvent to give a concentrated solution of pure flavor in the oil. Flavor-oil is then incorporated in molten sorbitol and the mixture allowed to cool.–U.S. Patent 2,904,440, Sept. 15, 1959.



Acid Bodies Captured and Returned To Make Better Instant Coffee

Improving flavor, body and aroma of instant coffees through isolation of high boiling compounds not recovered by conventional extraction methods, then adding them back to concentrate or dried product is object of recent patent.

This is accomplished by passing dry saturated steam or an inert gas at pressures of 1-18 in Hg absolute through heated, ground roasted coffee prior to conventional percolation. Gas then moves through column of silica gel which absorbs desired flavor portion. Gel is heated to 140F., and steamed to remove acid bodies. Where steam is employed, the steam-volatile mixture is condensed and added to the concentrated extract made from the same coffee by water percolation.

The method can be incorporated in an existing soluble plant by addition of three units: Steam ejector (B in drawing); condenser (D), and receiver (E). Here's how it operates: Following charging of extractor (A) with ground coffee heated to 140F., steam is introduced into ejector (B). When pressure drops to 1-18 in., steam is admitted to extractor through line (C). Steam and volatiles move from top of extractor to condenser (D) and condensate flows to receiver (E).

After desired quantity of condensate is obtained, vacuum is broken to allow for its removal from (E), steam is shut off and the coffee extracted with water or extract from other elements in percolator battery. Concentrated extract is collected in receivers (F) where condensate from (E) is added to produce an improved extract for drying, or use in a liquid form.–U.S. Patent 2,903,359, Sept. 8, 1959.

Treatment With Ultrasonics Speeds Juice Processing

Elimination of the conventional settling process for removal of tartrates and other suspended insoluble solids from grape juice, thus enabling continuous operation is the object of a recent patent.

Crux of the method is ultrasonic treatment of the juice. When product is to be sold as single strength juice, it is cooled to 30-50F. immediately after pressing, then exposed

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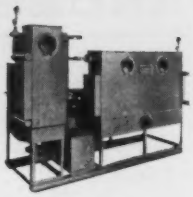

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Advances in Technology

to sound waves in the range of 20,000-10,000,000 cycles/sec. This is followed by filtration to remove agglomerates and crystals produced by the waves, then additional processing and packaging by conventional means.

In preparation of concentrate, juice is subjected to the ultrasonic treatment as it is continuously circulated through a vacuum evaporation system comprising heat exchanger and liquid-vapor separator. Crystals are removed from concentrate as it is continuously withdrawn from liquid-vapor separator.—U. S. Patent 2,903,-372, Sept. 8, 1959.

Gas Keeps Nuts Fresher

Shelf life of shelled nuts packed in transparent film may be extended considerably by packing in an atmosphere of nitrogen.

In studies with 5 kinds of nuts—walnuts, pecans, filberts, pistachios and macadamias—first 3 showed changes in color and flavor after 4 weeks at 75F. in air. After 25 weeks walnuts and pecans were dark colored and rancid. Similar samples packed in N_2 were still light colored and fresh. Pistachio and macadamias nuts retained their quality in air as well as N_2.

That light is important was indicated by the fact that nuts stored in darkness kept better than those exposed to bright light. However, colored cellophane overwraps were found to be of little value in protecting quality.—Agr. Marketing, May, 1959. (Pub. by Agr. Marketing Service, USDA.)

Organisms and Enzymes Degrade Cider Pectin

Pectin in cider is degraded during fermentation by a polygalacturonase (PG) derived from microorganisms, and a pectin methylesterase (PME).

Deesterification by PME can render pectin insoluble, but if apple variety is low in PME and pH is below 3.5 action is slow. PG is usually detectable, and is probably more effective than PME in removing pectin. It appears to come from yeasts, though molds from damaged fruit may be a secondary source. Phenolic substances, often present can inactivate the PG system.

These results, explain why pectin persists in heat-sterilized cider fermented by pure culture yeasts in which PG may be inefficiently pro-

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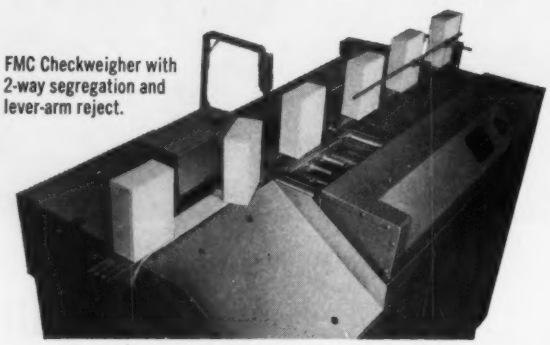
Accuracies up to ± ¼ % of the total package weight are possible with all three segregation methods:

3-Way Segregation—This system is recommended for open packages and tall containers. After the package is weighed and classified, the metal slats of the conveyor move the package straight ahead or ease it to the right or to the left, depending upon whether it is acceptable, underweight or overweight. The action is positive, yet smooth and gentle.

2-Way Segregation with Air Reject—With this system a jet of air removes rejected containers from the conveyor. It is most effective with small, closed containers and can be adjusted to reject either underweights, overweights, or both.

2-Way Segregation with Lever-Arm Reject—Recommended for heavier, closed containers, this system offers the same three reject choices as the air system.



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FMC Checkweighers handle cans, jars, trays or boxes—virtually any semi-rigid container with one flat surface ranging in size from 1½″ x 1½″ to 10″ x 10″. They are splashproof, easy to clean, and occupy only 48″ x 24″, with the height adjustable to fit production lines. The electronic system is mounted on a single plug-in chassis and housed in a slide-out drawer for easy maintenance.

In addition to the basic equipment, the checkweigher can also be equipped with a feedback control, recording devices to produce a printed record of production, and special-construction models for dusty or explosive conditions.

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duced. In such cases addition of pectin-degrading enzymes is advisable to obtain a clear cider.—*J. Science Food & Agr.*, 10(5), 253-60, 1959.

Reducing Loss of Thiamin From "Ray" Sterilization

Irradiation of beef and pork at dosages that sterilize them causes extensive destruction of thiamine.

This breakdown was somewhat reduced by ascorbic acid and $NaNO_2$. Glutathione neutralized with NaOH at a concentration of 0.1% was also effective.

Destruction of thiamine even at low doses of 100,000 rads was considerable. At extremely low temperatures thiamine losses are greatly reduced. At −75 C., for example, samples irradiated with 1,000,000 rads showed practically no thiamine loss, compared to 12% at −20, and 24% at −10. Odor and flavor changes showed a similar decrease at low temperatures.—*J. Science Food & Agr.*, 10(5), 295-300, 1959.

Modified Malting Process Improves Beer Quality

Increased extract yield, higher degree of modification as measured by Kohlbach and Hartong numbers, greater diastatic and proteolytic power, are benefits of a modified malting process (Belmont) developed in Belgium.

In it the germinating barley is sprayed with a glucose solution (50% solids of which 88% is reducing sugars) on last day of germination. Syrup is applied at rate of 3.5g./100g. barley steeped for malting. Malting losses seem to be lower than in control runs without glucose.

Soluble nitrogen (Lundin) fractions were increased, and worts from the treated malts were somewhat clearer with lower pH values.

In comparative brewings treated malts showed no differences in mashing or wort-filtering. Beers made with them clarified in storage more readily than those from wort made with untreated malt, were clearer after filtration, their ITT values were likely to be lower, and they were less sensitive to chilling. Beer foam was measurably better, and taste tests tended to favor it, especially after some weeks of shelf storage in bottles.—*Le Petit Journal du Brasserie*, 67(2744), 300-8; 67(2745), 318-23, 1959.

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Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Pa.

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at modern C. F. Mueller food processing plant

Moving farinaceous material at the rate of 125,000,000 lbs. per year is a big job, even for C. F. Mueller Company, one of the world's largest producers of macaroni and egg noodle products. Here is what the Sprout-Waldron pneumatic bulk handling installation has accomplished:

1. Saved more than 25,000 square feet of floor space.
2. Saved approximately $150,000 per year over previous mechanical and manual systems.
3. Simplified the maintenance of high sanitation standards.
4. Released more than $40,000 worth of materials handling equipment for other service.
5. Reduced the accident potential and simplified housekeeping and maintenance operations.

The unloading system consists of a negative pressure pneumatic unit which removes the material from the Airslide cars, elevates it to a product recovery unit from which it is taken by gravity through Gyro-Whip sifters which screen out oversized material and pass the product to a surge hopper. The material is then gravity fed into a scale where it is automatically weighed and recorded, then taken by positive pressure pneumatic system to any one of eighteen steel storage silos with a total storage capacity of 2½ million pounds.

The silos are arranged in clusters of six with screw feeders set up to take the discharge into special blending surge hoppers. The blending system allows for the removal of material from any two or several of the eighteen silos at a pre-determined rate and for combining them into a homogenous blend which is then conveyed by positive pressure to any of the silos.

The positive pressure system is also used to convey the blended material from the storage silos to the processing plant. By a preselected plan this distribution system automatically fills any of the bins in the processing plant as they require material.

The design and engineering of this modern unloading, blending and distribution and storage system was accomplished by means of closest possible teamwork between C. F. Mueller Production Manager, John Curry; Plant Engineer, Charles Becht; Project Engineer, August Stark; and the Materials Handling Division of Sprout-Waldron. The entire operation, which when operating at capacity can receive, blend and deliver to the processing plant approximately 125,000,000 lbs./ year is handled by one man on each shift. For complete details, ask for Bulletin I-47.

FOP/103

PRACTICAL PNEUMATIC CONVEYOR DESIGN

A technical article by the Chief Engineer of our Materials Handling Division. It tells how to select, operate and maintain pneumatic systems for transporting dry, bulk materials. Positive, negative and combination systems are illustrated and described. Ask for Bulletin I-28.

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The business community has made an impressive start in going to the desperately needed financial aid of our colleges and universities. Business contributions to higher education have increased from only $40 million in 1950 to $136 million in 1958.

This rise in financial aid to higher education should be a great source of satisfaction to the business community. But it goes only part way toward meeting the growing needs of colleges and universities for financial help. Over the next ten years business aid to our privately supported colleges and universities alone must increase to at least $500 million a year merely to provide decent faculty salaries and meet the increased operating costs of taking care of enrollments that will almost double.

One pervasive reason why many business firms have not joined the ranks of the companies contributing to higher education seems to be that, in the interest of prestige and public relations, they are making their provision of aid contingent upon finding some particularly novel way of providing it. So long as this point of view persists, business aid will lag, for there are simply not enough ways of providing financial aid that are both notably novel and sensible.*

How The Plan Works

There are, however, some well-tested ways of providing aid which improve rather than fade in appeal with more using. One such way is the making of supplemental tuition payments to colleges and universities at which a company's employees take courses.

Many companies have scholarship or tuition-refund programs which cover all or part of the costs to their *employees* of taking college courses. But, in most colleges and universities, tuition charges fall far short of covering the full cost of the education given. By making an unrestricted "cost-of-education" grant a part of their employee scholarship or tuition-refund plans, these companies could make a material contribution toward covering the *college's* full costs as well.

The tuition supplement can be a fixed amount or a percentage of the tuition charged. Some plans provide for supplements as high as 100% of tuition, though there is usually an upper limit to the total supplemental payment given for each employee enrolled in the institution.

The plan seems to have originated with the Ford Motor Company Fund. When we at McGraw-Hill first learned of it, it appealed to us as having so many advantages, and so few disadvantages, that we adopted it as one part of our own program of financial aid.

---

*The efforts of the McGraw-Hill Publishing Company to find a suitable method of aiding higher education prompted the writing of a "more or less Socratic dialog" entitled *A Business Wrestling with the Problem of Aid to Colleges and Universities*. Copies of this pamphlet, which underlines the difficulty of finding both a novel and satisfactory method of providing aid, are available on request.

HOW THE HEADS OF SOME OF THE INSTITUTIONS TO WHICH McGRAW-HILL HAS MADE GRANTS FEEL ABOUT THE TUITION SUPPLEMENT PLAN

"We are pleased not only because this addition to the never adequate supply of non-earmarked funds is a most welcome one, but also because it attests to the fact that the employees of our neighboring business firms are benefiting from the courses we offer at times convenient for them. We hope this mutually beneficial plan may continue and grow with the years."

Grayson Kirk, President
Columbia University

"I shall take this occasion to express deep sentiments of appreciation, in my own name and in the name of the members of the Board of Trustees, for the very effective manner in which your corporation is aiding higher education by the payments made under your tuition supplement plan. Certainly your action is indicative of the fact that you realize industry and higher education must join forces to preserve the basic American system of free enterprise."

Very Reverend John A. Flynn, C.M.
President, St. John's University

"The growing recognition by business and industry of the financial needs and important services rendered to the community by the colleges and universities is most encouraging, and Temple University is deeply appreciative of the fine support extended through McGraw-Hill's program of supplementary grants."

Robert L. Johnson, President
Temple University

The Plan's Advantages

The main advantages of the tuition supplement plan are:

- **It is simple and easily administered.** Payments can be made when scholarships or tuition refunds are granted, or at another time convenient to the company.
- **It relieves the company of the difficult and sometimes disagreeable task of choosing one college rather than another.** The individual employee makes the choice.
- **It directly serves the interest of the company by encouraging and aiding the institutions where its employees take courses.** In a sense, the company makes contributions in direct proportion to the value it receives in education for its employees.
- **It directly serves the interest of the colleges and universities receiving the grants by getting money to them in the form most appreciated**—unrestricted funds to be used at the discretion of their administrators.

Largely because tuition supplements are unrestricted as to use, this plan enjoys the unqualified approval and gratitude of the schools receiving such aid. This is not true of some of the other plans for granting aid to colleges and universities.

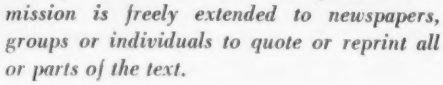
Tuition supplements, of course, can't be regarded as large efforts relative to the need of higher education and the responsibilities of business. But they are a very practical and useful first step, involving almost no problems. If you are not familiar with the idea of supplemental grants, why not discuss it with some of your friends in the field of higher education?

The Price Of Novelty

Our experience with tuition supplements indicates that this is an excellent plan, and we are glad to recommend it to other companies looking for an effective method of providing financial aid to higher education.

At any rate, we hope that business firms will not postpone granting financial aid until they find some novel way of doing it. If they do, it will be another case of too little and too late.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.



PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

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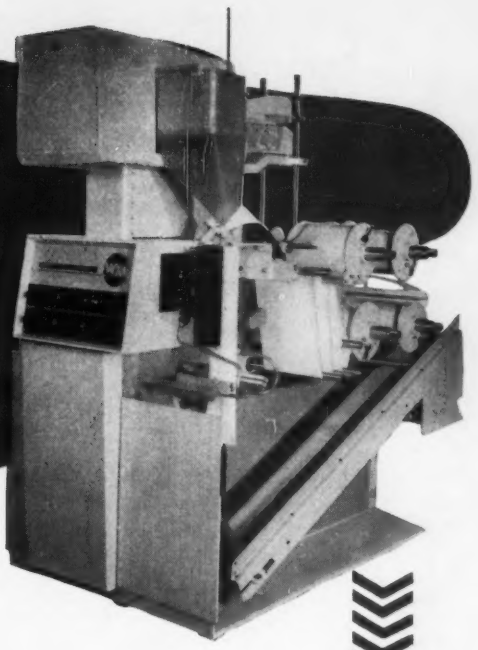

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Automatic Packaging System For Fragile Free-Flowing Products

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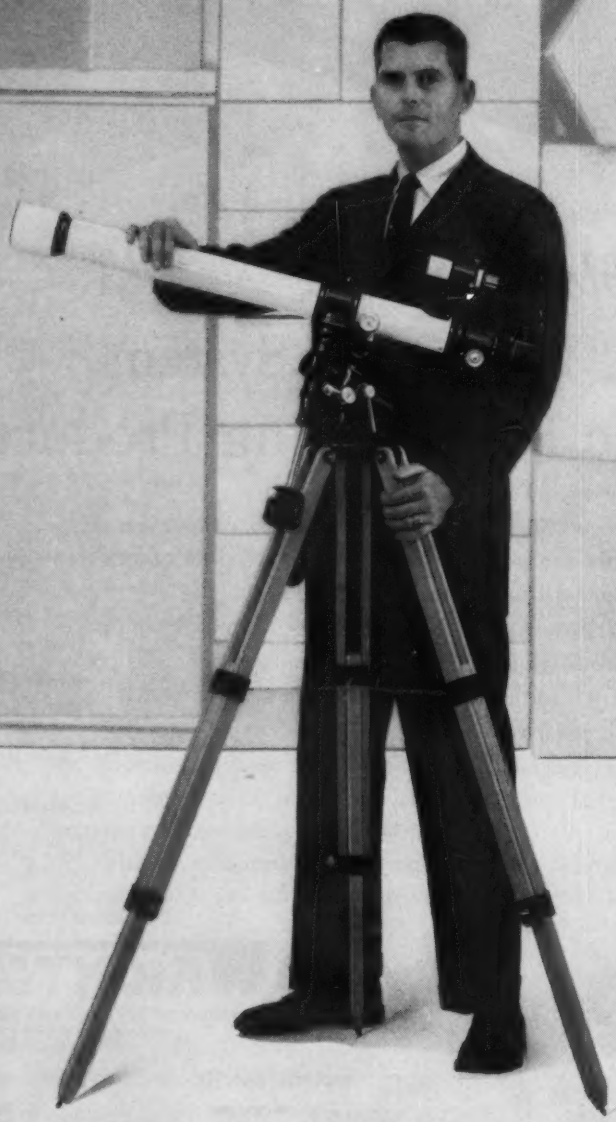


GAYLORD CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

MEN & COMPANIES

Charles G. Mortimer

Looking Ahead . . . Concentration on future development and growth will be the main task of Charles G. Mortimer, new board chairman of General Foods Corp.

Moreover, he will continue his former duties as chief executive officer, and will head a new corporate development council.

Succeeding him as president and chief operating officer is Wayne C. Marks, former executive v.-p.

Three new executive v-p.s are Herbert M. Cleaves, C. W. Cook, and John A. Sargent.

General manager posts go to E. Burke Giblin at Jell-O Div. and Arthur E. Larkin Jr. at Maxwell House Div. (Jean Raeburn photos)

Wayne C. Marks

Dr. William B. Reynolds

Research Priority . . . Increased executive attention to research activities in the areas of food, chemical, mechanical, physical, electronic, nuclear handling, upper atmosphere, and livestock feeding is underway at General Mills Corp.

Moving in as v.-p. and director of research is Dr. William B. Reynolds, who will concentrate on coordinating research at GM's central and divisional labs for integration into the total research program.

He formerly held the post of research chief with Phillips Petroleum Co.

Bakery Packaging Critique . . . Today's quality-conscious consumer is looking for the same marks of quality in baked-goods packaging that he sees in other foods.

So declares Merrill A. Grogel, chief of Reynolds Metals Co.'s new baking packaging group. He feels that color monotony and weak design are making bakery products suffer in supermarket competition.

Mr. Grogel's market group will work to give bakers increased benefits from Reynolds' extensive packaging research programs.

Merrill A. Grogel

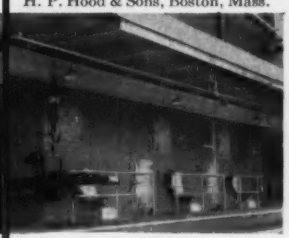
King

SHARP FREEZE SYSTEMS

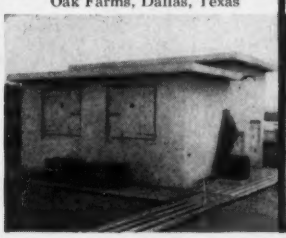
increase hardening room capacity because they can be located anywhere

INSIDE *the room*
The Borden Company, Cedar Rapids, Iowa

OUTSIDE *the room*
H. P. Hood & Sons, Boston, Mass.



ABOVE *the room*
Oak Farms, Dallas, Texas



BELOW *the room*
Luick's Ice Cream, Milwaukee, Wis.

Over 60% of the nation's largest plants have found King Sharp Freeze Systems adaptable to their specific needs. King Systems feature fast, economical air defrost . . . each unit is defrosted 20 to 30 minutes, varying from once or twice a week to once a month. Reduced capacity periods before defrosting or interruption of normal operations during defrosting is entirely eliminated. *Let us show you how to reduce the cost of operating your hardening rooms.*

Write for free technical bulletin. More than 50 years experience is at your service.

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FACTS YOU WILL WANT TO KNOW

About YELLOWS

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Need replacements for Yellows No. 3 and 4? Our research department has developed ideal replacements for these colors made from *natural* carotenoids.

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Personnel

Marshall E. Beaver, Corn Products packaging engineer, is supervising construction of a new pre-packaging plant at Durban, South Africa.

Cliff W. Isaccson, director of cake sales for Continental Baking Co., is now v.-p.

W. Ray Junk has been appointed Director of Product Development for California & Hawaiian Sugar Refining Corp.

Richard A. Meyer moves up to post of v.-p. and general manager at Anheuser-Busch.

Louis Ratzesberger, Illinois Canning Co. president, has been named to USDA's Agricultural Research Policy Committee.

Industry

Borden Co. has acquired **Causse Mfg & Importing Co.,** Middlesex, N.J. maker of preserved fruits.

Oscar Mayer & Co. has inauguarted a new $750,000 humane-slaughter CO_2 hog immobilizing station at its Madison, Wis., plant.

Minute Maid Corp. has taken over complete ownership of **Golden Fruit Juices, Inc.,** Fullerton, Calif.

John Morrell Co. has entered Chicago slaughtering operations with acquisition of Illinois Meat Co.

Associated Industry

Chamberlain Labs, new R&D center of **U. S. Stoneware Co.,** has been dedicated at Stow, Ohio.

Celanese Corp. has completed expansion of Pampa, Tex., facilities, bringing capacity to 240 million lb. per year.

Chemetron's Girdler Process Equip. Div. will build a 30-metric-ton-per-day edible oil plant in Iran.

Olin Mathieson Chemical Corp. announces a 2-yr. expansion program for packaging division, totaling $12 million.

Deaths

Edward S. Moore Jr., 53, chairman of executive committee, National Biscuit Co.

Frank R. Warton, 70, vice-president, Quaker Oats Co.

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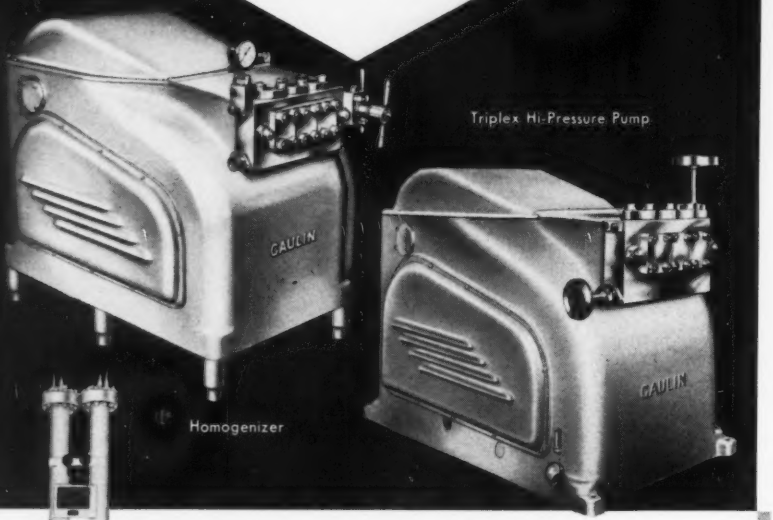

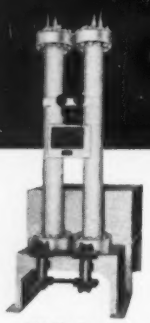

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NEW EQUIPMENT & SUPPLIES

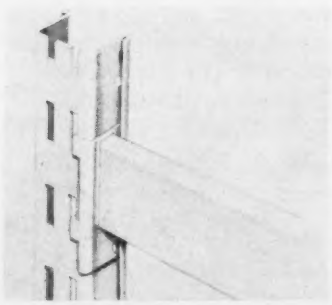
Vari-Volume Filling Pump

Flowing materials can be dispensed in specific volumes ranging 1/30 to 16 oz. per stroke, using different sizes of new Filamatic stainless steel sanitary filling pump.

And with addition of a micrometer-control accessory, user may, at will, make any volume adjustment in this range on his single unit.

Pump may be attached to any rotating mechanism operating at speeds to 80 rpm. Thus, it can adapt a packet former into former-filling equipment. Fills are termed accurate to better than 1%.

Whole mechanism may be disassembled in less than a minute, making for easy cleaning.—*National Instrument Co., Inc., Baltimore 15, Md.* **Circle 325 on Reader Service Card**



Jiffy-Rig Storage Racks

No tools, bolts, or nuts are needed for rigging up new "RidgUrak" storage rack installations. As shown in this detail photo, horizontal stringers are quickly slipped into upright channels at whatever level is called for in desired racking arrangement. Double-hook pad welded to stringer slides up or down and locks in any 4-in. slot.—*Bernard Gloekler North East Co., North East, Pa.*

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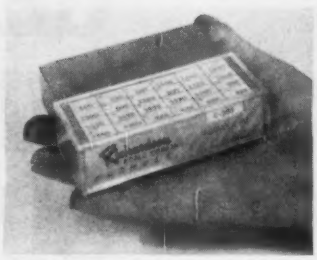

For pre-setting, capsule . . .

. . . is slipped into formulator

Capsule System Gives New Formulating Precision

Manual errors in blending, proportioning, and batching are eliminated, and operations streamlined, with use of the new electronic Formula Capsule system.

Integrated with the "Select-O-Weigh" automatic proportioning panel, the pocket-size control (left photo) comprises a network of miniature electronic components sealed in a shatter-proof protective cover.

Capsule will program sequence and weigh up to 24 solid and/or liquid ingredients in a single formula. Each ingredient is pre-set by a simple setscrew on the capsule.

By inserting capsule in portable Capsule Formulator (right photo) and moving indicator switch to Position 1, desired weight of first ingredient can be set on formulator dial. Adjustment of capsule setscrew, until meter is brought into balance, assures perfect proportioning. Formula identification is made easy by use of a removable formula card that slips into place on top edge of capsule.

In the operating routine, the preset unit is inserted in the receiving slot of the Select-O-Weight panel. Attendant then presses a button to set fully automatic system into action.—*Richardson Scale Co., Van Houten Ave., Clifton, N. J.*

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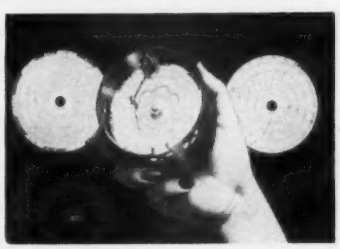

Handy Time-Temp Recorder

Here's a "spot action" instrument (designated Model 585) that's readily placed anywhere in plant, warehouse, or shipping vehicle to record time-and-temperature data.

For use in liquid or wet environments, it may be encased in a thin polyethylene bag.

Employed is a dry stylus—no ink to spill, freeze, or run. A spring-wound clock movement powers charting action.

Buyer may specify either 24-hr. or 7-day models, and either 20 to 220F. or −40 to 160F. temperature ranges. — *The Pacific Transducer Corp., 11836 W. Pico Blvd., Los Angeles 64.* **Circle 328 on Reader Service Card**

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Get full information—including technical data and formulas. Call your Sunkist man or write Sunkist Growers, Products Sales Dept., 720 E. Sunkist St., Ontario, Calif.

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Exchange

Humane-Slaughter Stunner

Preparatory to killing, hogs are stunned for 1½-2 min. on application of the new Presco Lcktro-Stun humane-slaughtering tool.

Operator need only rest contact-electrode unit on animal's head, then pull trigger-switch. Power is supplied from compact cabinet that plugs into ordinary 110v. current. This cabinet may be wall-mounted or castered for easy portability.—*Preservaline Mfg. Co., Flemington, N. J.*

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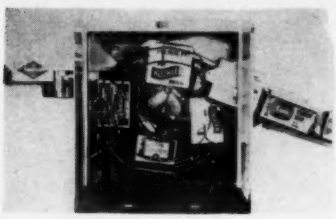

Cleans 44 Cases a Min.

Action of efficient new MOS case cleaner is illustrated by this open-side photo. Completely automatic, unit removes debris and trash from containers at speeds to 44 cases a min.

Virtually all sizes of cases are handled — fiber, corrugated, or wood. And partitions may be left in during operation.

In running cycle, cases are inverted, air-blasted, vibrated, re-inverted, and discharged. Optional equipment is offered for fogging with insecticide.—*Mangel-Scheuermann & Oeters, Inc., 1238 N. 31st St., Philadelphia 21.*

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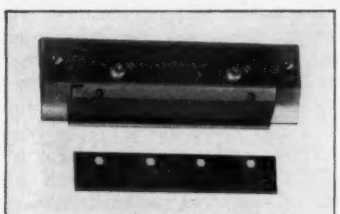

'Safety Razor' Food Slicer

Seen here are holder, sample blade, and blade-pack of new food slicing unit that was "inspired by the common safety razor."

Use of insert-and-throwaway blades was conceived as answer to problem of faulty cuts due to dull knives. Blades measure 4⅛x¾ in. They're also supplied in a wavy-edge version for making "corrugated" slices.

Maker's Model "CC" slicer (for potatoes, mushrooms, strawberries, etc.) employs the new cutters. — *Urschel Labs., Inc., Valparaiso, Ind.*

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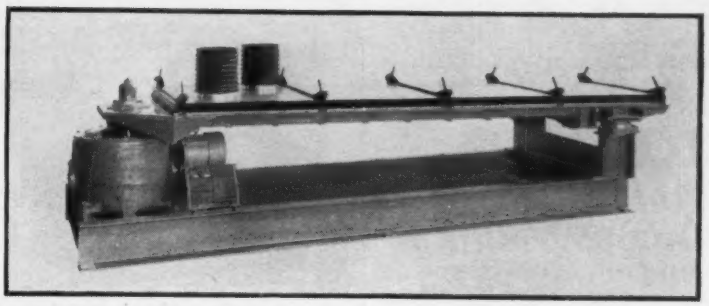

High-Efficiency Cooler

New self-contained surface-contact cooler, the Rotex, is a high-efficiency production run unit.

Cooling is effected by circulating chilled water through a baffled jacket beneath unit's flat surface. This surface moves with a horizontal gyratory action at feed end, with diminishment to straight-line motion at discharge end. Action uniformly spreads material over entire cooling surface.

Equipment is of stainless steel, with smooth surfaces and rounded corners for highest sanitation. Dust-tight top cover is readily removed for fast cleaning.—*The Orville Simpson Co., Cincinnati 23, Ohio.*

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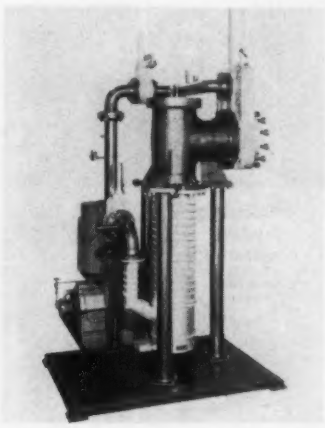
Job-Speeding Staple Gun

Lightweight Duo-Fast S-762 stapler is versatile gun-type tool that drives long, heavy gage staples.

It accelerates and simplifies such work as assembling skids, making up plywood and fiberboard shipping crates, setting up boxcar framing, and speeding general construction jobs.

Gun operates at air pressures as low as 50 lb. to imbed staples rapidly and securely without recoil.—*Fastener Corp., 3702 River Rd., Franklin Pk., Ill.*

Circle 333 on Reader Service Card



'Packaged' High-Vac Pump

Newly offered packaged high-vacuum pumping units come complete with manifolding valves, air and water piping, wiring, and controls, ready to be coupled for use.

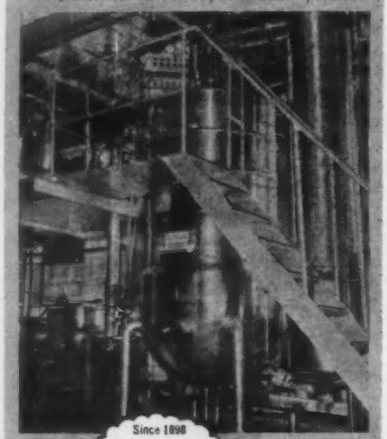
Designated the Series 1400 line, the 2, 4, and 6 in. models are portable (castered), while the 10, 16, and 32 in. models are skid-mounted. Photo shows 10-in. unit.

Units employ diffusion pumps with mechanically refrigerated or liquid-nitrogen cooled traps. Where outgassing is heavy at intermediate pressures, mechanical boosters are added for rapid pump-down.

Valves are manual or air-operated, and standard instrumentation may be either indicating or fully automatic. —*General Vacuum Corp., 400 Border St., East Boston 28, Mass.*

Circle 334 on Reader Service Card

PROBLEM:
Produce Quality Spreads More Efficiently; Reduce Costs
SOLUTION:
Mojonnier
VACUUM FRUIT SPREAD COOKER
Mojonnier 48" Vacuum Spread Cooker in plant of M. Polaner & Son, Newark, N.J. plant. Production line push-button operated.



Since 1898
Polaner
and Son
producers of the finest jams, jellies, preserves

The Mojonnier Fruit Spread Cooker brought these advantages to Polaner:

▶ IMPROVED FLAVOR—Since the product boils at 134°F, carmelization and burned tastes are eliminated. Gentle cooking treatment improves natural fruit appearance. Essence is recovered in condensate.

▶ UNIFORM COOKING—Steam heated inner jacket is designed for maximum heat transfer. Cooking under vacuum assures natural fruit color and flavor retention—permits faster sugar penetration.

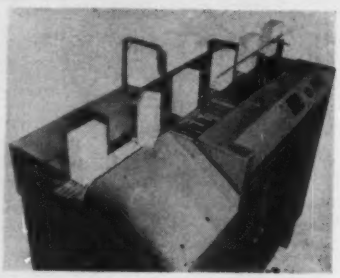
▶ GREATER EFFICIENCY—Vacuum cooking is faster—push-button controls fill, empty or transfer product, using air valves. Solid stainless steel sanitary construction plus "in-place" cleaning guards against off-flavors. One 42" Cooker equals production of four, 100-gallon open kettles.

If higher production costs have cut your profits, check the low cost efficiency of the Mojonnier Fruit Spread Cooker.

Write: MOJONNIER BROS. CO.
4601 W. Ohio St., Chicago 44, Illinois

Mojonnier
QUALITY ENGINEERED FOR ECONOMY
VACUUM
FRUIT SPREAD COOKERS
Dependable Products . . . Backed by Dependable Service

Equipment & Supplies



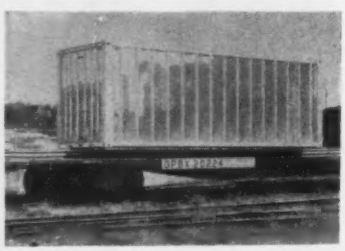
Segregating Checkweigher

Two-way segregation is feature action of new checkweigher that handles sealed containers at speeds to 350/min.

Unit rejects or passes any combination of overfilled, underfilled, and acceptable packages. Weighing is "on the fly," and to achieve maximum accuracies at high speed, the scale is "pre-loaded" with individual tension adjustments. Thus variances of as little as ¼% of total package weight can be detected.

Electronic system operates to divert unacceptable packages (as second container in photo) down a chute.

This new model handles virtually any semi-rigid container with one flat surface ranging in size from 1½x1½ in. to 10x10 in. Recording devices may be fitted if desired. — *FMC Packaging Mach'y Div., Stokes & Smith Plant, 4992 Summerdale Ave., Phila.* **Circle 335 on Reader Service Card**



Debut of '3-Route' Container

This initial 3-route transport container—specifically designed for interchangeable use on road, rail, or ship—is announced by GATX in conjunction with Fruehauf Trailer Co.

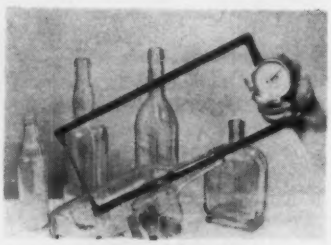
The cooperating companies herald the development as a most significant step toward "complete containerization in the transport industry."

Cited are economies through removing need for carrying trailer chassis and tires on piggy-back shipments, and through speeding of terminal operations.

Containers are steel-and-aluminum units in 17, 20, and 24-ft. lengths. Body components are available for varied service requirements. Special fittings adapt the containers for loading and unloading by crane, winch, and large fork-truck.

Units are structured so they may be stacked two high while loaded and awaiting shipment. And they readily serve as mobile, weather-tight storage units. — *General American Transportation Corp., 135 S. LaSalle St., Chicago.*

Circle 336 on Reader Service Card



Measures Bottle Walls

Wall thickness of bottles, jars, and various narrow-neck containers is quickly gaged with this new apparatus.

One of device's "legs" telescopes to permit easy introduction through even ½-in. container necks for convenient measurement. It can "take a reading" to a distance of 12¾ in. from mouth-opening.

A smaller model of instrument pictured is available for use where container necks are under ½ in.— *Testing Machines, Inc., 72 Jericho Turnpike, Mineola, N. Y.*

Circle 337 on Reader Service Card

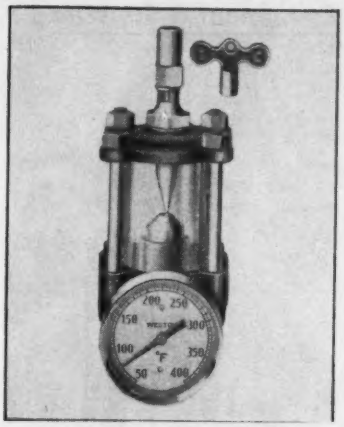
Computer Process Control

Now offered for "planning and fitting" to various food production and handling operations are what are termed "the first completely integrated" systems of automatic industrial process control.

Here, all-transistor computers (RCA 110s) are linked with advanced electronic instrumentation.

Employing both magnetic core high-speed memory and magnetic-drum memory storage, computer can accept, and act on, reports from hundreds of sensory devices stationed along plant production, process, or handling lines.

It signals control units to initiate necessary action, records the facts for future reference, and where desired communicates the data to business-type computers for further processing.—*The Foxboro Co., Foxboro, Mass.* **Circle 338 on Reader Service Card**



Unit Replaces Steam Traps

New Series-300 condensate-flow regulator is adjustable-orifice unit for draining heating and processing units operating continuously at pressures to 60 psi.

Of needle-type, orifice has no moving parts, thus is virtually maintenance-free. Condensate is drained immediately so that each steam-operated unit performs at peak. Flow of condensate can be regulated by hand key (photo). And once properly adjusted, locked shield prevents unauthorized changes.

Sight glass and optional dial thermometer permit constant visual checks on condensate flow and temperature of steam in specific equipment.

Scale and any other impurities are readily flushed by opening valve. — *Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis, Ind.*

Circle 339 on Reader Service Card

Newest Canner's Glove

Thin gage and light weight mark this latest-model canner's-type glove. Close check of cannery routines was behind its design.

Palm and fingers have a molded, corrugated surface for giving best grip. Further feature is "cadet"-type finger design, meaning wearer's fingers reach to end, eliminating annoying and unsafe excess rubber at tips. Fabrication is of natural rubber and neoprene latex. — *Hood Industrial Gloves, Watertown 72, Mass.*

Circle 340 on Reader Service Card

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. H-119, 614 Superior Avenue, N.W.
Cleveland 13, Ohio

Please have your trained representative call on us to discuss our production problems.

Name_____

Company_____

Address_____

City_____ State_____

To Whom money May Concern:

If your production costs are higher than they ought to be, you very likely can do something about it. Often one change in a method or process can make the difference between loss and profit. We'd like a chance to consult with you and see if such a change in method won't improve *your* profit picture. (It certainly has paid off for many other firms). The best part is, that it won't cost you one cent to find out. Just clip the attached coupon and mail it. When you do, one of our trained conveyor belt representatives will visit you to discuss and examine your particular problem and offer suggestions that will show you how Cyclone Metal Processing Belts may cut your production costs below the ulcer level. These suggestions will be tailored to YOUR problem . . . and no obligation. How can you lose? Do it, today. *USS and Cyclone are registered trademarks*

Cyclone Fence Dept.
American Steel & Wire
Division of
USS
United States Steel

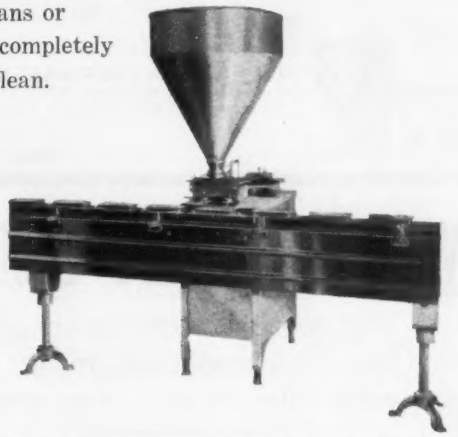
Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices Coast to Coast

CIRCLE 227 ON READER SERVICE CARD

For inexpensive filling . . .

the **SIMPLEX** TWIN

Top efficiency with this fully automatic Simplex Model T. A universal machine to handle cartons, cans or jars. No can no fill, completely adjustable, easy to clean.



Fills 25 to 80 containers per minute! Range from 2 oz to a gallon! Handles liquids and semi-solids!

Write for circular on this 2-piston model and other Simplex fillers. Dept. FE.

F. L. BURT COMPANY

571 7TH ST.—SAN FRANCISCO 3, CALIF. PHONE KLONDIKE 2-2020

Name .....

Address .....

City ..... State .....

Get more blending in less space...

SIX MERCHEN FEEDERS IN 120 SQUARE FEET

Compact W&T Merchen Feeders are easy to install and operate in crowded areas—can even be ceiling-hung. Space requirements are kept to the minimum without sacrificing precise control.

W&T Merchen Scale Feeders allow more efficient use of existing plant space. Without spending money for new space, you can increase production . . . regulate yield . . . control quality. By installing Pneumatic Merchen Scale Feeders, you get centralized control as well as recording and totalizing of production.

And your product quality is insured by the minute-to-minute accuracy of these feeders . . . each formula ingredient is accurately fed by weight into your blend.

Learn how you can save space and money with W&T Merchen Feeders. Write to Dept. M-43.37

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

CIRCLE 228 ON READER SERVICE CARD

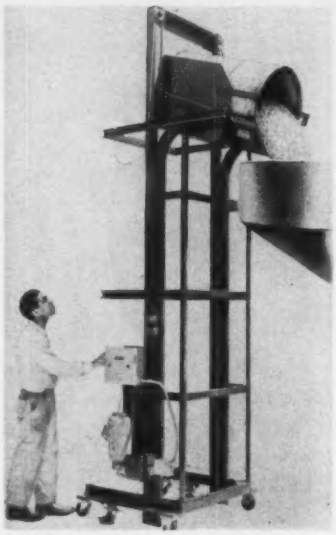
WATER ISN'T CHEAP ENOUGH TO WASTE

W&T controlled chlorination saves water and lowers treatment costs. You get maximum water value and use... even reuse.

Write for details on the new V-notch chlorinators: address Dept. S-137.37

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

Equipment & Supplies



Lift-&-Dump Drum Handler

Time and labor are saved using this drum lifting and dumping rig—which also can be adapted for handling bags.

Called the Cesco Jr. Model DU, it's specially designed for low-cost batch loading of mixers, blenders, tanks, kettles, and bins.

Either stationary or portable models are available in capacities to 400 lb. and dumping heights to 12 ft.—*Conveyors & Dumpers, Inc., P.O. Box 567, West Caldwell, N. J.*

Circle 341 on Reader Service Card

Multi-Point Temp Monitor

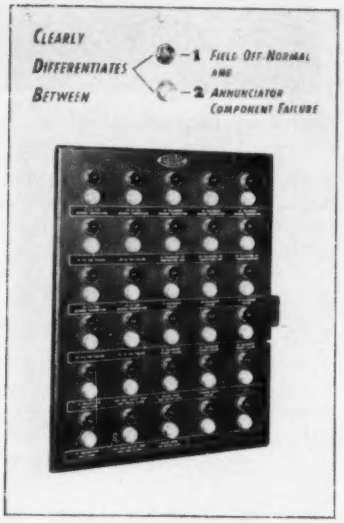
"Star", standing for simultaneous temperature alarm readout, designates this completely transistorized panel-cabinet that will monitor up to 100 temperature points.

It's so designed that when any point reaches the temperature indicated on its control dial, an alarm is sounded, with the critical point

shown by a numbered light on panel.

Actual temperature at any point may be determined by first depressing "quiet" button, then rotating appropriate set-point dial until numbered light flashes. There's a small writing area beside each dial for jotting original set-temperature, thus curbing error when resetting. — *Fischer & Porter Co., 303 Jacksonville Rd., Hatboro, Pa.*

Circle 342 on Reader Service Card



Sure-Signal Annunciators

Using this "Fail-Safe" annunciator and alarm panel, operator can immediately differentiate between unit's own component failure and any "off-normal" field condition.

Surety lies in 2-lamp design whereby red light reveals field abnormality, while a paired white light shows that annunciator component is "out."

Premise for this "insurance" design is that component failures, though infrequent, can prove extremely costly where undetected in a vital alarm system. — *Panalarm Div., Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.*

Circle 343 on Reader Service Card

Speeds Bacon Packaging

A conversion unit called the Slicetron now equips the Anco slicer for shingling bacon into pre-counted strips, grouped to approximate package weight.

Incorporated are (1) a control that adjusts slicer for slab size, (2) an electronic slice counter, and (3) a slice roll that receives the shingled groups of strips.—*Portland Div., Emhart Mfg. Co., Portland, Conn.*

Circle 344 on Reader Service Card

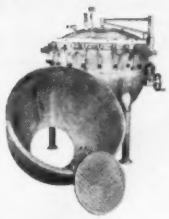
SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

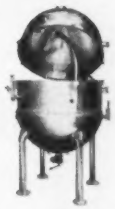
BUILT-IN QUALITY

. . . IN HAMILTON SPECIAL OR STANDARD KETTLES ASSURES LOWER PROCESSING COSTS



PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.

SPECIAL—PC Style Pressure type mix-cooker. Jacket to full 200 gal. level. Plate type heating-cooking coils arranged to act as agitator baffle plates. Entire unit removable for easy cleaning.

Hamilton offers the right kettle for any mixing or cooking job. The Cost? Reasonable and economical in the light of finished and polished fabrication. Sanitation guaranteed. Careful competent workmanship and constant inspection assures you of quality that is built-in. We'll work from your prints or create them for you on our drawing boards. Write for free Hamilton Kettle Catalogue.

ESTABLISHED 1876

HAMILTON Kettles

COPPER AND BRASS WORKS

DIVISION OF BRIGHTON CORP.

820 STATE AVENUE, CINCINNATI 4, OHIO

CIRCLE 121 ON READER SERVICE CARD

MEYER MACHINE COMPANY

P. O. BOX 5096 • • • PErshing 4-5151
3528 FREDERICKSBURG RD. • SAN ANTONIO 1, TEXAS

Patent Pending

MEYER SIMPLEX CONVEYING ELEVATORS are in daily use throughout the world where they are gently and efficiently conveying such products as Sugar; Grain; Whole and Diced Vegetables; Beans; Corn; Seed; Coffee Beans; Instant Coffee; Powdered Milk; Cake Mix; Bakery Products; Candy; Edible Nuts, and many other food products, as well as Chemicals; Carbon Black; Bottle Caps; Small Parts, etc. Sturdily built for round-the-clock operation and low maintenance, the SIMPLEX is available in a size or capacity to meet your specific needs.
Also with end or side discharges and with cast aluminum alloy or stainless steel buckets for sanitation and long life.

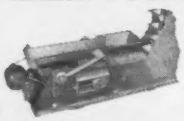
- SAFE
- DURABLE
- SANITARY

WRITE FOR BULLETIN 910

MEYER *Simplex* CONVEYING ELEVATORS

Hopper can be removed for cleaning

Available with



VIBRA-FLEX FEEDERS and HOPPERS . .
TO ASSURE A UNIFORM FLOW OF MATERIAL

The built-in Adjustable VIBRA-FLEX Feeder, above, is used when SIMPLEX is fed from a holding bin. The Portable VIBRA-FLEX Feeder and Hopper, left, is used when manual feeding is desired. Feeding rate on both are adjustable.

CIRCLE 229 ON READER SERVICE CARD

add sales punch to your foods with **PRO-80** *protein*

The sales punching-est words in food merchandising these days are "protein enriched." With General Mills Pro-80 Vital Gluten (80% wheat protein m.f.b.) you can raise the protein content of your foods to any level desired. Economically. Easily. Pro-80 provides these processing benefits:

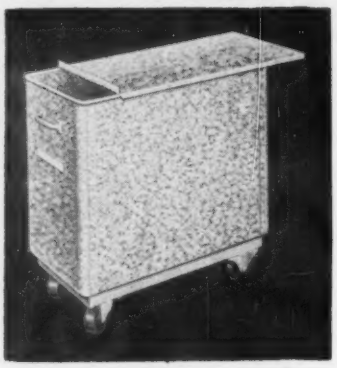
★ *Hydration agent* ★ *Oil and fat absorber*
★ *Adhesive and cohesive agent*
★ *Dough former* ★ *Strengthening agent*

You should get all the facts about Pro-80 right now while interest in protein enrichment is still climbing. For more specific information covering your food product write:

SPECIAL COMMODITIES DIVISION
Minneapolis 26, Minn.

General Mills

Equipment & Supplies



Sanitary Ingredient Bins

Offered in six sizes, new portable ingredient bins are sturdy work-saving and space-conserving units. And design (all-cove corners) accents sanitation.

Covers close automatically when bin is rolled to wall (as under workbench). Nameplate holders identify contents.

Where purchaser desires, hinge covers can be provided. — *Wilder Mfg. Co., Inc., Mechanic St. & Erie RR, Port Jervis, N. Y.*

Circle 345 on Reader Service Card

Disposes Cans In a Jiffy

This portable electric crusher simplifies disposal of empty and reject cans.

Employing safe, short-stroke jaw action, unit compactly flattens cans (up to gallon size) at speedy put-through rate.

Power is supplied by ¾-hp. motor operating from ordinary a.c. outlet. —*Rescor Industries, Bar Bldg., Mt. Vernon, N. Y.*

Circle 346 on Reader Service Card

from OLIN MATHIESON

a whole family of kraft packages for shipping, selling!

Now Olin Mathieson offers complete kraft packaging service —Cartons, Containers, Bags and Sacks—all the way from your door to the consumer's. Contact the Olin Mathieson kraft packaging team today: let them show you how superior raw materials, better package design, and new Olin Mathieson packaging developments can help you save more, sell more! Packaging Division, W. Monroe, Louisiana.

OLIN MATHIESON • PACKAGING DIVISION

SEE EDWARD R. MURROW ON "SMALL WORLD"—EVERY SUNDAY EVENING, CBS-TV

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL

	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

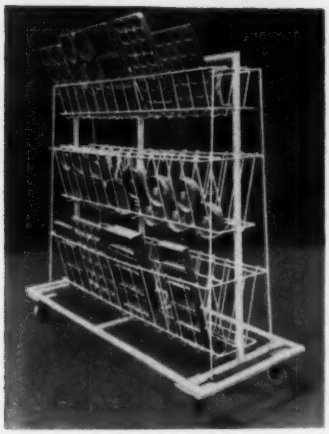
Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin



Assorted-Pan Wash Rack

Three continuous pockets are incorporated in each side of this new Model B-191 "assorted" bakery-pan washing rack. Unit holds all types of pans, efficiently exposing their sides for washing and sanitizing by high-pressure sprays.

Wide angle supports also act as handles for easy entrance to, and exit from, combination pan-rack washer. And swivel-type oversize casters aid in propulsion of rack into machine.

Another new pan rack is the B-187, a multi-pocket three-shelf unit for volume cleaning of strapped pans and bun pans.—*The Alvey-Ferguson Co., 5950 Disney St., Cincinnati 9.*

Circle 347 on Reader Service Card

INGREDIENTS

Imitation Pineapple, flavor F-1213, is cited as a sweet, natural-taste agent lending itself to ready food use at minimum cost. Also offered is powder form product (Permaseal F-2749).—*Givaudan Flavors, Inc., 321 W. 44th St., N. Y. C. 36.* (348)

NEW SUPPLIES

Anti-Stick Spray Coat for use on metal processing and handling components incorporates Teflon and Kel-F plastics. Maker cites insulating and corrosion-resisting properties.—*R. S. Hughes Co., Inc., 4515 Alger St., Los Angeles 39.* (349)

Ice and Snow Melting Compound, tradenamed Ice Rem Super, is recommended for keeping walks, steps, loading docks clear and safe. Material is in chip form to "stay put" where applied. It won't damage con-

AUTOMATIC BATCHING HANDBOOK

EVERYTHING YOU NEED TO KNOW ABOUT AUTOMATIC BATCHING

- HOW TO DO IT
- HOW MUCH IT COSTS
- WHAT YOU NEED
- HOW TO USE WHAT YOU HAVE
- HOW TO SELECT THE RIGHT SYSTEM

If you are now combining two or more ingredients in any kind of formula or batch, write now for this new *free* automatic batching handbook. It describes in detail how automatic batching works, how to convert existing plant facilities or plan new plants for automatic operation. It illustrates the latest batching systems available, lets you select the right type for your particular needs. Also shows you how to combine materials handling equipment, storage facilities, and weighing equipment for greatest economy, increased production. This is the newest, most complete handbook on automatic batching available—be sure to write for your free copy today!

HOWE

THE HOWE SCALE CO. • RUTLAND, VT.

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

CIRCLE 125 ON READER SERVICE CARD

SILICONE NEWS from Dow Corning

Prevent Costly Foam

Dow Corning Silicone Defoamers Reduce Waste, Increase Capacity

Foam is costly . . . it takes up production space, slows down processing, causes maintenance problems—may even create a fire hazard! You can control foam once and for all with the most effective antifoams ever developed: Dow Corning silicone defoamers.

Odorless, tasteless, and physiologically harmless, Dow Corning silicone defoamers are used extensively in processing and packaging foods, syrups, and antibiotics. Effective at extremely low concentrations and safe to use, they neither alter nor contaminate the end product. Dow Corning Antifoam A may be used in nonstandard foods at concentrations to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.

IN FREEZING MIXES

A typical application: in making Fudgsicles, foaming of milk, chocolate and other ingredients caused numerous rejects of frozen bars and also cut production space. Antifoam AF Emulsion added to the processing prevents foam . . . helps keep production up and costs down.

IN ANTIBIOTICS

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5523.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

Equipment & Supplies

crete or asphalt.—*Speco, Inc.*, 7308 Associate Ave., Cleveland 9. (350)

Non-Skid Floorings are reported assured with use of new anti-corrosion resurfacing compound. Called "Safety Floor," material is specially formulated for areas subject to liquid, fat, or oil spillage.—*The Garland Co.*, 3748 E. 91st St., Cleveland 5. (351)

New Sanitary Wiping Pads, called "Hi-Absorb," speed cleaning chores. Made of a special lint-free, nonwoven fabric, they're very porous for quick pickup of oil, grime, and dust. —*Waxcleen Co., Div. of Gen. Mach'y Corp., P.O. Box 285, Sheboygan, Wis.* (352)

BRIEFS

Area-Sterilizing Unit, remotely controlled, provides thorough germicide action with beta-propiolactone vapor, which desperses readily without leaving dangerous residues.—*Wilmot Castle Co., Rochester, N. Y.* (353)

Endless Woven Conveyor Belts employ PVC plastic linings (one or both sides). Thus, belts resist oils, grease, and mold. Further, products won't adhere.—*Ammeraal, Wormerveer, Holland.* (354)

Disposable Inker that employs new microporous Porelon resin is now included on Packomatic units for sharper imprinting. Smudging is curbed and type cleaning minimized. —*J. L. Ferguson Co., Joliet, Ill.* (355)

New Bag-Sealing Machine handles cello, aluminum-foil, waxed, and various laminated types in continuous operation. There's no limit to bag width, bags being fed in by two heat-resistant V-belts. Travel initially is through pre-heaters, then between electrically heated brass rollers. Speeds run 2,000-3,000 bph., depending on bag width.—*Machinefabriek Verwachting, Wormerveer, Holland.* (356)

Electric Vibrators in new RC line are designed to move stubborn materials from bins or hoppers to conveyors in accurately measured stream. Water- and dust-tight, units generate penetrating vibratory action through rotating eccentric shaft (no pulleys or belts).—*Cleveland Vibrator Co., Cleveland 13.* (357)

Circle Key Numbers on Reader Service Card

SANITIZE SAFELY!

New Type Organic Chlorine Powder

KLENZADE

Tri-Chloro-Cide

Non-Corrosive for All Stainless Steel Processing Equipment

NO FILM
NO SEDIMENT

Sparkles in Hardest Water!

HIGH GERMICIDAL STRENGTH

Klenzade has greatly reduced the corrosion problem common to ordinary chlorine sanitizers with Tri-Chloro-Cide — a high powered stable chlorine powder that won't pit or corrode stainless steel. Tri-Chloro-Cide is an *organic* chlorine that produces a clear, sparkling solution of exceptional germicidal strength . . . even in hardest water! Tri-Chloro-Cide is perfect for fogging or rinsing. Leaves no film or sediment. Remarkably stable, quickly soluble, excellent shelf life.

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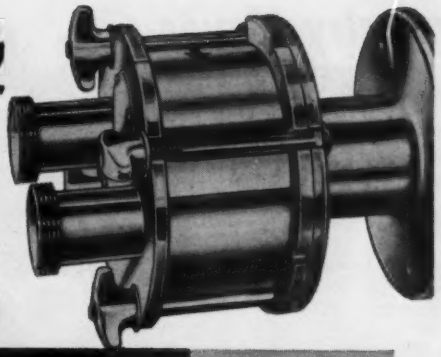
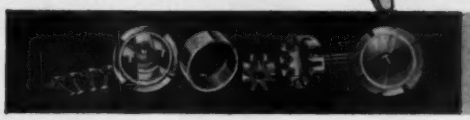
CIRCLE 230 ON READER SERVICE CARD

VIKING "Sanitor"

the POSITIVE PUMP for easiest cleaning





SIMPLE TAKE DOWN OF "SANITOR" PUMP PARTS

The positive discharge and smooth, even flow of Viking "Sanitor" Pumps is only a part of the reason why Vikings will serve you best.

You can't beat "Sanitors" for easy disassembling. You can do it in less than a minute. For cleaning and re-assembling, it's a cinch. No tools are needed. You have no threads, deep O-ring grooves or splines in the pumping zone for hard cleaning.

Viking "Sanitor" Pumps meet all 3-A standards.

They give extra long service, and there is no need to return "Sanitors" to factory for repairs.

It's the simple, sturdy, truly sanitary pump for milk and other food products.

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VIKING — The Leader not a follower in Rotary Pumps

VIKING PUMP COMPANY

Cedar Falls, Iowa, U.S.A.; in Canada, it's "ROTO-KING" pumps.

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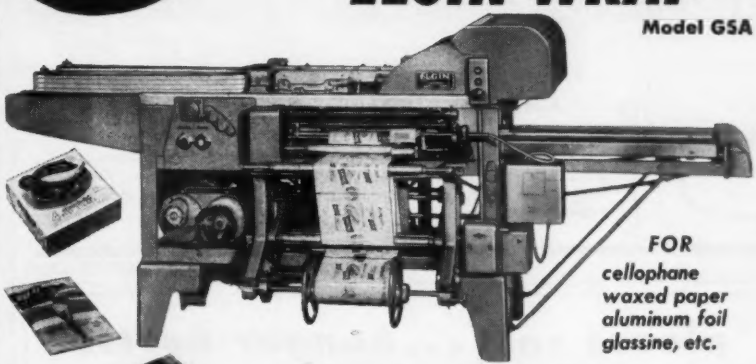
Elgin EARNS ITS WAY

"60-A-MINUTE" ELGIN-WRAP

Model GSA



FOR cellophane waxed paper aluminum foil glassine, etc.

- ★ high-speed, straight-line producer
- ★ fully adjustable for package variety
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Fully automatic, the great Elgin-Wrap is built to be a steady, swift and easily maintained producer! Designed to handle heat-sealing materials, it can also be equipped with photo-electric registration controls for printed wrappers. And the Elgin-Wrap is unequalled in its price field for speed.

Send samples for quotations and recommendations on your needs.

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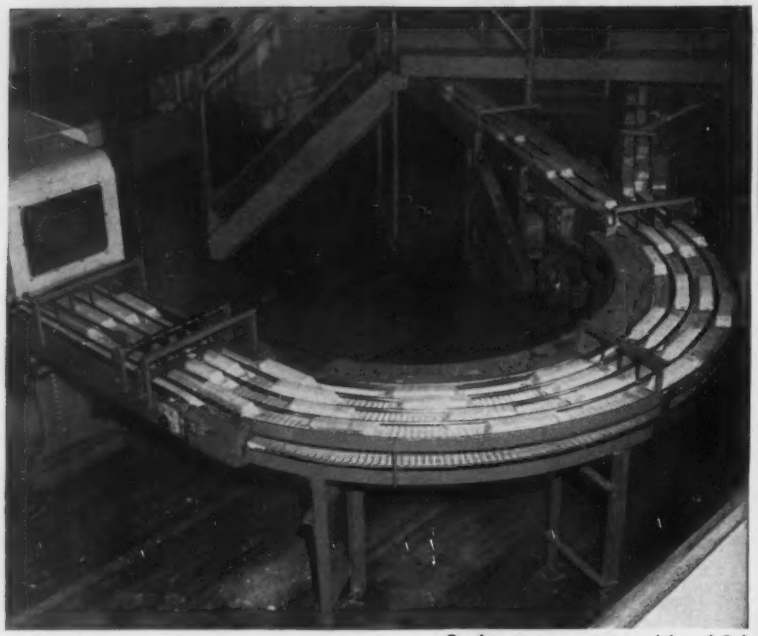
Industry Moves



Crackers turn corners on an Ashworth Belt

on Metal Process Belts by ASHWORTH

Every industry has its product flow problem; frequently, it's one of "getting around a corner". Around the corner or straightline travel . . . whether it's crackers, popcorn, candy or nuts and bolts . . . there's an Ashworth Metal Process Belt to solve the problem.

Fabricated from any metal capable of being formed into wire, Ashworth belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go—Ashworth Belts will help you effect economies and . . . keep your product on the move.

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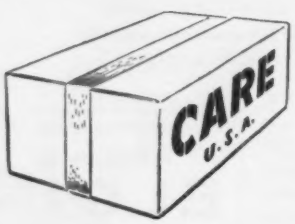
CIRCLE 128 ON READER SERVICE CARD

please care . . . hunger hurts!



More than half of the people on earth do not have enough to eat. CARE gets foods from U.S. farm abundance, buys other items to fill country needs, delivers one Food Crusade package for every $1 you give. And your name and address go with each package, to make friends across the world!

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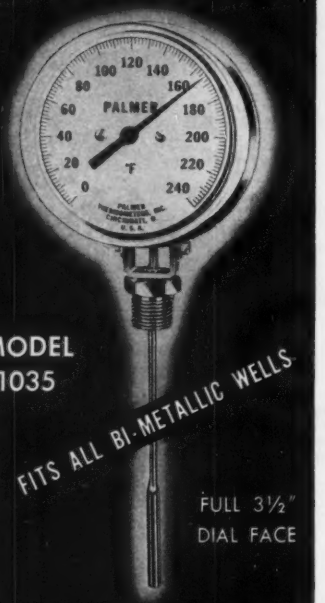
Dial Thermometer



Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

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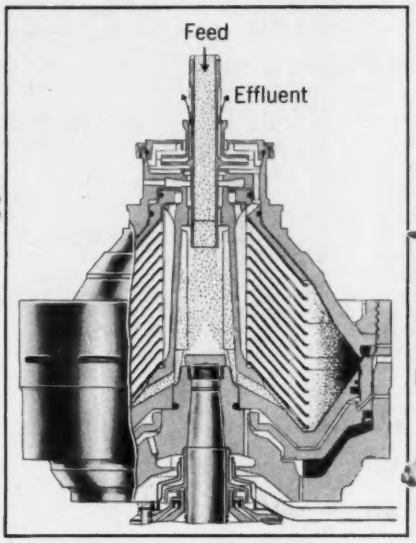
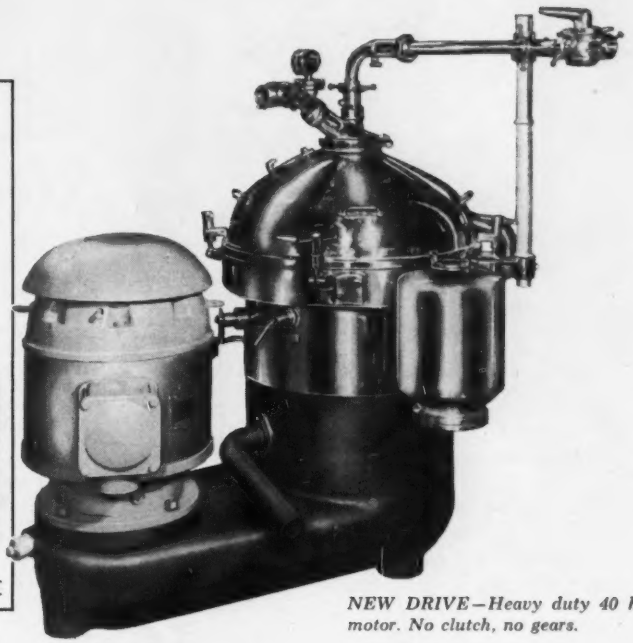


SIMPLE—Only two more parts than in conventional disc bowl...no nozzles, valves, bolts, or springs to complicate assembly and disassembly.



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...with Automatic Sludge Ejection

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If you are processing one of these materials or a similar product, it will pay you to investigate continuous clarification or separation with "Big Sam".

▸ CONTINUOUS

"Around-the-clock" operation—up to six weeks, depending on product...up to 8000 gph capacity.

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De-sludging cycle controlled by timing unit...choice of complete or partial de-sludging.

▸ SANITARY

Stainless steel construction throughout bowl and all other liquid and sludge contact parts...bowl designed for complete self-cleaning...CIP cleaning possible.

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Built-in pump discharges effluent free of entrained air.

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130 CIRCLE 130 ON READER SERVICE CARD

JUST OFF THE PRESS

PLANT ENGINEERING

Air Dryer. Discusses compact model for continuous dehumidification of labs, test rooms, and small storage areas. 2p.—Dryomatic Corp., Alexandria, Va. (411)

Overhead Track Scales. Tells how shallow pattern design of firm's models permit installation where headroom is at premium.—Detecto Scales, Inc., Brooklyn, N. Y. (412)

Electric Hoists. Selection guide for heavy duty model, ¼-12-ton capacity. Discusses speed and height of lift, current supply, operating conditions and other factors. 34p.—American Engineering Co., Montreal, Canada. (413)

Ejectors. Tells how firm's general utility models provide low cost way to create vacuum, increase pressure, or mix gases. 4p.—Ingersoll-Rand, N.Y.C. (414)

Air Compressors. Covers principles, operation, regulation and control of small air-cooled units. 16p.—Ingersoll-Rand, NYC. (415)

Carbon Dioxide Plant. Details design and construction of high-purity unit.—Girdler Construction, Louisville, Ky. (416)

Shock Controls. Reference charts plus text review new uses of neoprene and rubber pad materials. — Voss Engineering, Chicago. (417)

Vacuum Equipment. Summary and price list classifying company's units by type and code number. 16p.—NRC Equipment, Newton, Mass. (418)

Cooling Tower. Data on 600 cross-flow type glass fiber reinforced units. — Marley Co., NYC. (419)

Calculator Chart shows preferred materials for 247 corrosives.—Hoke Corp., Cresskill, N. J. (420)

Spring Clutches. Five lines, sizes ⅛-1 in., torque cap. 1250, to 5 hp. 30p.—Curtiss-Wright Corp., Wood-Rridge, N. J. (421)

Steam Boilers. Describes and illustrates firm's complete line. 30p.—James Leffel Co., Springfield, Ohio. (422)

Rotocycle Meter. Describe 2S type applicable in food field. 2p.—Rockwell Mfg. Co., Pittsburgh. (423)

Adjustable Speed Drives. Gives mounting positions, rating tables, available accessories of firm's new ¼-25 h.p. line. 16p.—General Electric Co., Schenectady, N. Y. (424)

Damper Regulator. Details unit that also regulates fans, stokers, oil & gas valves, etc. 2p.—Atlas Valve Co., Newark, N. J. (425)

Platecoil. Features multiple header configuration for improved steam distribution.—Tranter Mfg., Inc., Lansing, Mich. (426)

Packaged Boilers. Details models in 15-25 hp. range. 4p. — Orr & Sembower, Reading, Pa. (427)

Unit Coolers. Details features of latest models. 2p.—Drayer-Hansen Co., Los Angles. (428)

PROCESSING

Fish Meal Dryer. Photos of installation and auxiliary control equipment, design data, etc. 8p. — Standard Steel Corp., Los Angeles. (429)

Processing Equipment. Describes attrition mills, pulverizers, seed cleaners, nut processing machinery. 4p.—Bauer Bros. Co., Springfield, Ohio. (430)

Inert Atmosphere Generators. Includes typical installations, applications, features, and flow chart. 4p.—Gas Atmospheres, Inc., Cleveland. (431)

Dispersion Mills. Details on 4 sizes for handling such products as chocolate, heavy pastes, etc. 4p.—J. H. Day Co., Cincinnati. (432)

Paste Purifiers. Performance details on units for elimination of metallic or other foreign particles from thin or thick fluids.—Hermann Bauermeister G. M. B. H., Hamburg-Altona, Germany. (433)

Poultry Chillers. Reviews new counter-flow method for handling 50 birds/min. 4p.—Frick Co., Waynesboro, Pa. (434)

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POWELL
FOR CORROSION RESISTANT VALVES

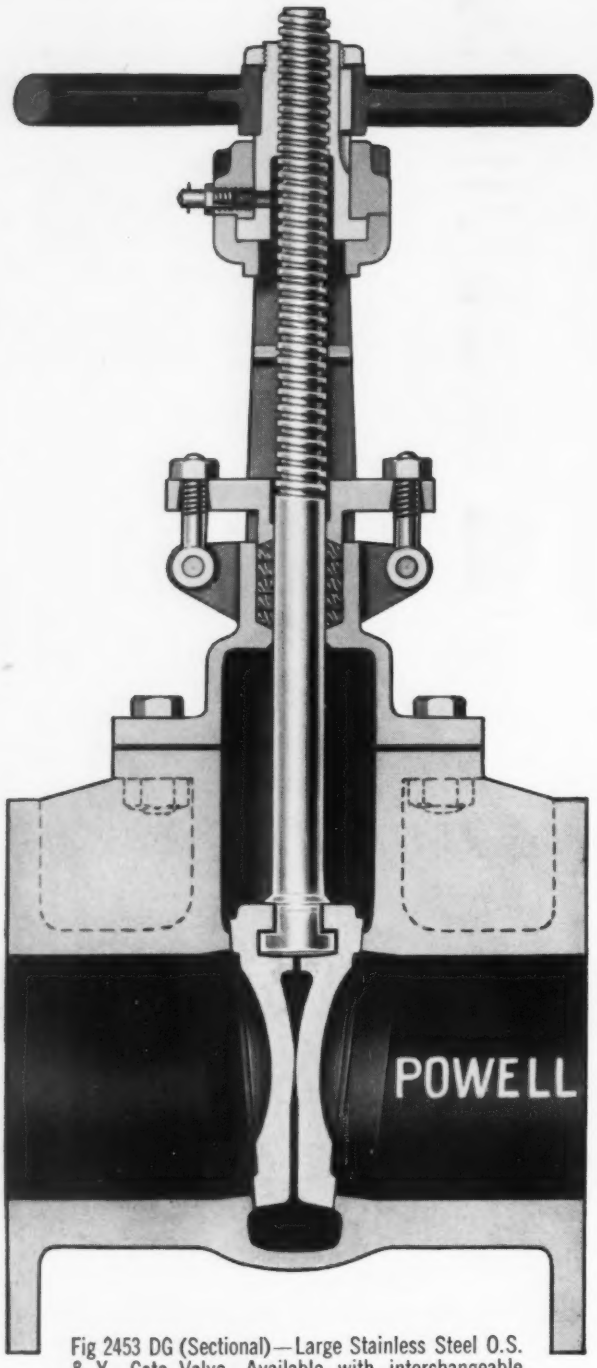

Fig 2453 DG (Sectional)—Large Stainless Steel O.S. & Y., Gate Valve. Available with interchangeable solid or split wedges. Wedges are fully guided throughout their travel.

Fig. 2633—Large, Stainless Steel Swing Check Valve for 150 W.P. Sizes, 2" to 12".

Powell Corrosion Resistant Valves are made in stainless steel, Monel, nickel, Hastelloy alloys, aluminum and other special corrosion resisting metals.

Solid and double wedge discs of gate valves are interchangeable. They are precision machined and fitted, and are accurately guided throughout their entire travel. This prevents drag of the disc over the seat faces, eliminating wear of seating surfaces and stops undue vibrational noises.

O.S. & Y. Valves — Stems are threaded and guided through a bronze bushing in upper yoke. (Bushings made of other alloys can be supplied on special order.) A compression lubricant fitting in upper yoke is provided to lubricate the stem and bushing threads and to reduce wear. A convenient shelf is cast on the inner sides of yoke arms for suspending the gland when renewing the packing.

All valves are regularly packed with Teflon Packing. Globe and "Y" valves are available with metal or Teflon discs.

Globe, Angle, Gate and "Y" valve stems are back seated for repacking under pressure when fully open.

For all your flow control requirements—water, oil, gas, air, steam, as well as corrosive fluids—Powell has the right valve in the right size and the right metal. Consult your local Powell distributor or write directly to us.

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Plate Freezer. Photos, schematics, and description of double contact unit for faster freezing of packaged foods. 8p.—Dole Refrigerating Co., Chicago. (435)

Spray Dryers. Cites advantages of continuous, automatic method, illustrates various models in color. Answers special questions. 8p.—Proctor & Schwartz, Philadelphia. (436)

PACKAGING

Transparent Bags. Reference guide for determining type, size, loading method and closure for stock size cellophane and polyethylene bags. 18p.—Dobeckmun, Cleveland. (437)

Bread Wrapping. Illustrated manual outlines procedure for achieving perfect package. 20p.—Waxed Paper Merchandising Council, Chicago. (438)

Bag Closer. Details features and operation of unit for Universal containers. 2p.—Union Bag-Camp Paper Corp., NYC. (439)

Automatic Packaging. Discusses Cluster-Wrap multiple-packaging system. 4p.—Mead Packaging, Atlanta, Ga. (440)

Feed Bagging Scale. Describes automatic high-speed unit for 25, 50, 100 lb. bags. 6p.—Richardson Scale Co., Clifton, N. J. (441)

Automatic Counter. Applications description and specifications of new model. 2p.—Atronic Products, Bala-Cynwyd, Pa. (442)

Polystyrene Sheet and Film. Reviews firm's line.—Plax Corp., Hartford, Conn. (443)

Fill Controls. Details company's container inspection-rejection system. 8p.—Industrial Nucleonic Corp., Columbus, Ohio. (444)

Automatic Filler. Discusses versatile high-speed unit for granules, slurries, liquids. Gives information on speed, control, materials handled, etc. 4p.—Bartelt Engineering Co., Rockford, Ill. (445)

MATERIALS HANDLING

Bulk Feeder. Illustrates new, full-capacity model for continuous flow. 4p.—Verti-Veyor Co., Paterson, N. J. (446)

Density Measurement. Gives features and specs of continuous flow system. 12p.—Industrial Nucleonics Corp., Columbus, Ohio. (447)

Package Sorting and Merging. Describes photo-electric system and installation.—Photomation, Inc., Bergenfield, N. J. (448)

Belt Conveyors. Details advanced features of new series inclined and horizontal units.—E. W. Buschman Co., Cincinnati. (449)

Fork Lift Trucks. Pictorial review of firm's line. 16p.—Allis-Chalmers, Milwaukee. (450)

MANAGEMENT

Product Planning Set-Up. Tells how to establish function in your company: Policy, organization, and procedures, with numerous examples. — Market Planning Corp., N.Y.C. (451)

European Markets. Discusses market and free trade areas, plus consulting services. 4p.—Porter Interna-

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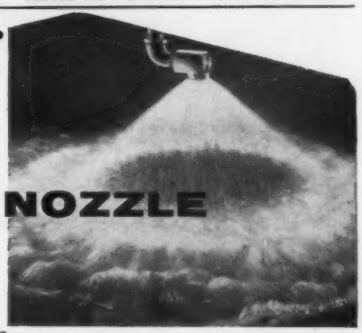

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is this giant 34,000 pound sugar mingler which will process 100 tons per hour.

Anthony specializes in engineered continuous mixing applications for all solid and semi-solid food products.

Capacities of our standard mixers range from a few hundred pounds per hour to as much as one hundred tons per hour.

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SHEFTENES are a source of high-quality milk proteins, with an abundance of lysine and tryptophane. As such, they are unsurpassed for improving the protein quality of foods—wheat and grain products particularly.

II

SHEFTENES are versatile *functional* ingredients. They are used — efficiently and economically — to enhance the texture, appearance and shelf-life of bakery, cereal, dairy, meat products, beverages, infant foods and many others.

SHEFTENE products come in powder form, are soluble and possess no marked flavor or odor characteristics of their own. Write today for samples and technical data to Dept. FE-119.

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tional Co., Washington, D. C. (452)

Customer Service Lab pictured and described. 4p.—J. H. Day Co., Cincinnati. (453)

SANITATION & MAINTENANCE

Group Showers. Details basic 3-height column type, suggests installation and floor plans. 8p.—Bradley Washfountain Co., Milwaukee. (454)

Degreasing Concentrates. Two brochures on industrial cleaning methods. 6p.—Brulin & Co., Indianapolis, Ind. (455)

Mats and Treads. Compound features for floor and stairs. 4p.—American Mat Corp., Toledo, Ohio. (456)

Floor Surfacing. Properties, applications, advantages of emery-epoxy. 2p. — Walter Maguire Co., NYC. (457)

INSTRUMENTS

Recorder Changer. Describes new patented device for automatically changing circular recording charts.—Maeder-Squier Co., Dallas, Tex. (458)

Thermocouples. Lists and describes company's full line of units, components, accessories. 52p.—Leeds & Northrup Co., Philadelphia. (459)

INGREDIENTS

Colors & Dyes. Details firm's inventory and facilities for small volume users. 6p.—Pylam Products Co., NYC. (460)

Biochemicals & Radiochemicals. Lists price reductions on 200-plus items, introduces 32 new products, many commercially available for first time. 28p.—Schwarz Laboratories, Inc., Mount Vernon, N.Y. (461)

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and contamination-free products

Why risk product contamination when du Verre fabricated Ducts, Hoods, Tanks and Open Vessels are completely inert to virtually all food products. Unlike coatings or linings, du Verre resin bonded Fiberglass is homogeneous in structure giving protection inside and out!

du Verre is light, strong and economical in first cost and field erection. Since it never requires painting, it is clean and maintenance free.

Shown right is a typical brine making unit by du Verre. Many of these units have been in service for years producing clean pure brine for the food processing industry.

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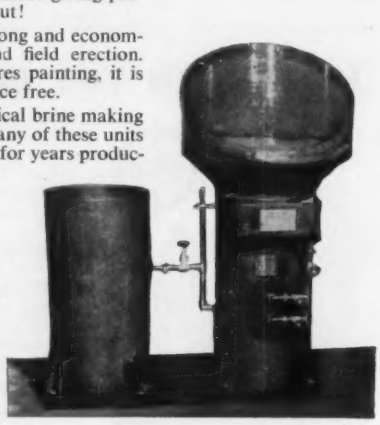

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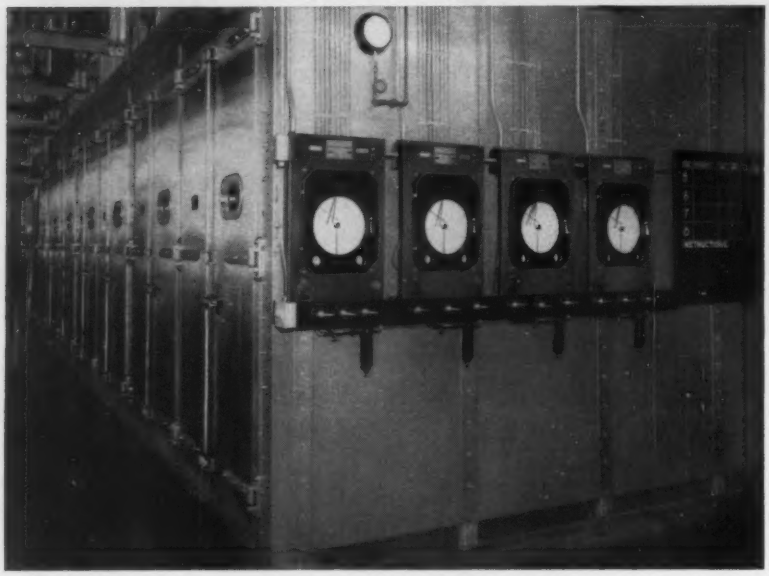
Four of the eight Taylor FULSCOPE* Recording Wet-and-Dry Blub controllers regulating humidity and temperature on Julian smokehouses at A. Szelagowski & Son's new Buffalo, N.Y., plant.



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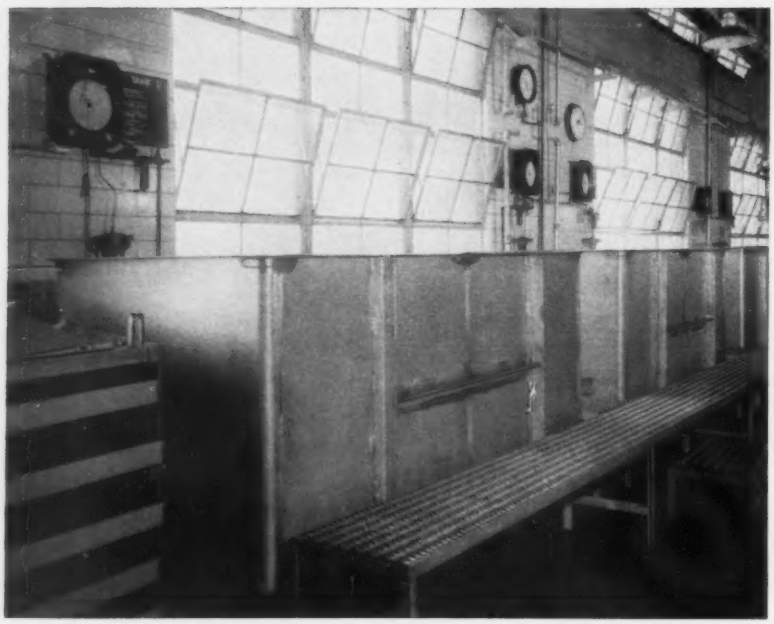

Taylor FULSCOPE Temperature Controllers also insure *exact* water temperatures in six cooking vats.

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AN ENCYCLOPEDIA OF CANDY AND ICE-CREAM MAKING *by Simon E. Leon. Chemical Pub. Co., 212 Fifth Ave., NYC. 454 p. Price:* $12.

This handy reference contains detailed discussions, in alphabetical order, of confections, ingredients, and processes designed for candy and ice-cream manufacturers, particularly operators of small or medium-sized shops.

Also included are hundreds of tested formulas, plus the newest developments in special ingredients, techniques, and equipment.

New Product Planning

ORGANIZING FOR PRODUCT DEVELOPMENT *(Report No. 31). American Management Assn., 1515 Broadway, NYC 36. 115 p. Price:* $3.

Leaders of a number of outstanding research and engineering programs describe various aspects of the overall product development structure, from establishment of corporate objectives to final integration.

On premise that no 'model' organization can be found, the manual presents programs that are deemed similar to specific needs, and points out appropriate adjustments.

Frozen Potato Reference

POTATO PROCESSING *by W. F. Talburt and Ora Smith. AVI Pub. Co., P. O. Box 388, Westport, Conn. 475 p. Price:* $9.50.

Heralded as the first book to cover all phases of potato processing, this valuable reference includes detailed descriptions of production procedures for all types of frozen, dehydrated, and canned products.

Latest information concerning preparation, packaging, freezing, handling, and storage makes it must reading for all frozen food executives.

Study in Packaging

PACKAGING RESEARCH: AN INVENTORY *by S. A. Larsen, American Management Assn., 1515 Broadway, NYC 36. 207 p. Price:* $6.

Prepared under the auspices of AMA's Packaging Research Committee, this study offers a comprehensive and classified inventory of literature reflecting packaging research.

Current trends in research are de-

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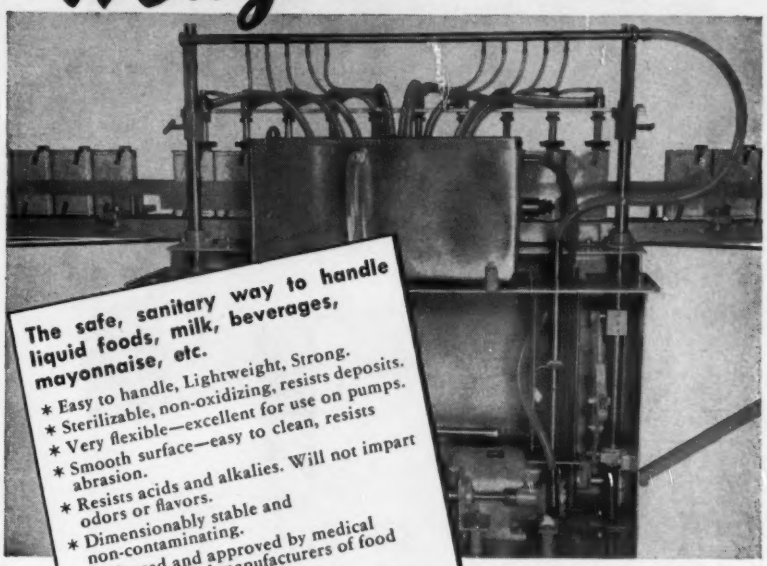

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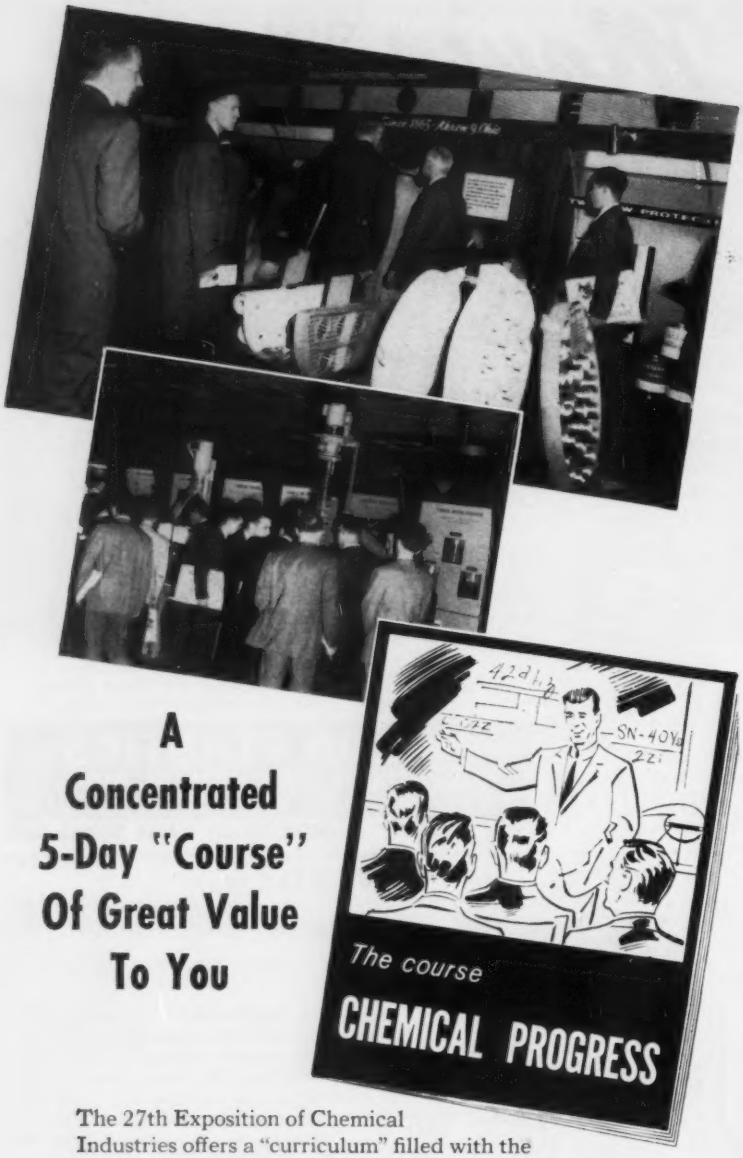

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scribed, and principal sources of packaging information are listed. Special requirements of particular industry groups are reported.

Latest Enzyme Volume

ADVANCES IN ENZYMOLOGY (Vol. 21). *Ed. by F. F. Lord. Interscience Pub. Co., 250 Fifth Ave., NYC 1. 521 p. Price:* $12.50.

Modern developments in enzyme uses are detailed here by leading experts.

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Booklets and Reports

INCOME AND HOUSEHOLD SIZES: THEIR EFFECTS ON FOOD CONSUMPTION (*Marketing Research Report No. 340*). *Office of Information, USDA, Washington 25, D. C.* Study is concerned with quality vs. quantity of food consumed.

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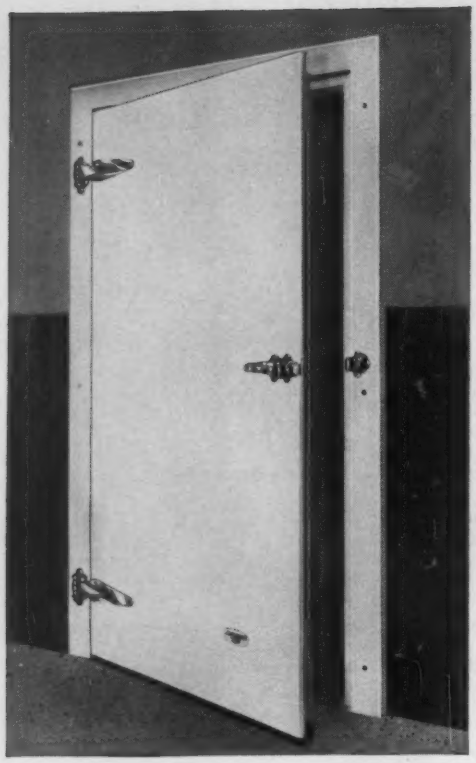

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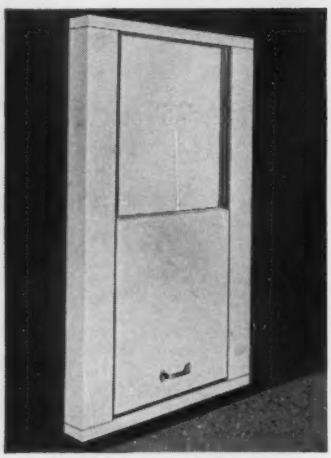

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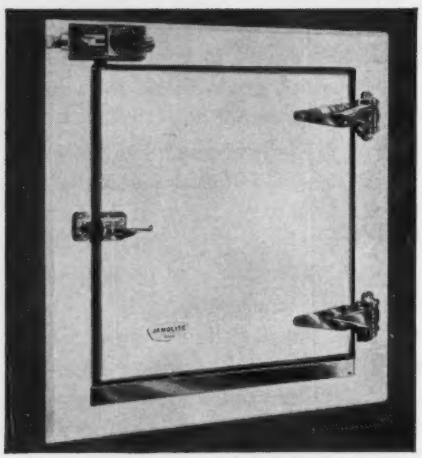

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Heat Treating Evaporated Milk for Preservation in Sealed Containers.—A. E. Pech, Food Machinery & Chemical Corp., San Jose, Calif. No. 2,892,723.

Disintegrating Hops Suspension to Dissolve Resins and Disperse Insolubles Before Adding to Wort.—H. L. Griffin, Blaw-Knox Co., Pittsburgh. No. 2,893,870.

Agglomerating Powdered Material by Jet Spraying and Tumbling Actions.—H. L. Griffin, Blaw-Knox Co., Pittsburgh. No. 2,893,871.

Retarding Non-Enzymatic Browning of Enzymatically Deactivated Potatoes. — USDA. No. 2,893,878.

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Dough Extruder Comprising Hopper, Extrusion Nozzle and Belt Conveyor.—G. A. Jorgenson, Stickelber & Sons, Inc., Kansas City, Mo. No. 2,888,886.

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Sausage Stuffer Comprising Paired Worm Conveyors Feeding Extrusion Nozzle.—A. Thielen, Verden, Germany. No. 2,889,574.

Apple Coater for Continuously Conveying Fruit Through Tank Containing Confection. — H. Pikal, Bangor, Mich. No. 2,889,801.

Delayed-Action, Remotely-Located Counter.—R. M. Magnuson, Santa Clara County, Calif. No. 2,889,986.

PACKAGING

Infusion-Type Tea Packages With Loop-Handle Suspension Constructions.—H. O. Irmscher, National Tea Packing Co., Inc., Long Island City, N.Y. No. 2,891,867.

Heat-Shrinkable Plastic Package With Meat's Exposed Bone Covered With Wax-Impregnated Cloth.—M. S. Selby, W. R. Grace & Co., Cambridge, Mass. No. 2,891,870.

System for Supplying Carbonated Beverage to Filling Machine's Reservoir With Gas Maintained Above Liquid Level.—R. H. Breeback, Crown Cork & Seal Co., Baltimore. No. 2,892,472.

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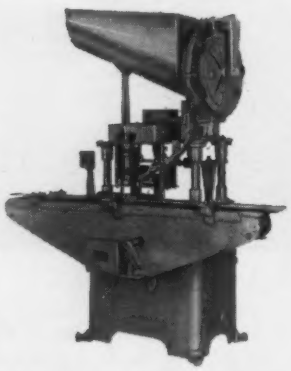

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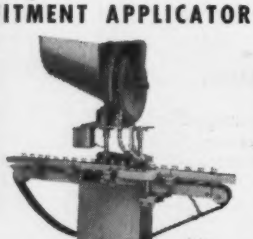

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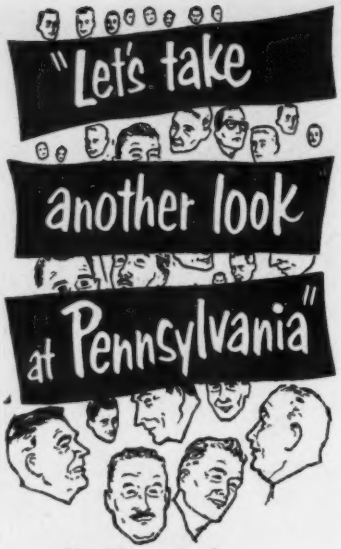

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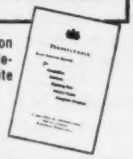

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Of Food Engineering, published monthly at Albany, New York for October 1, 1959.

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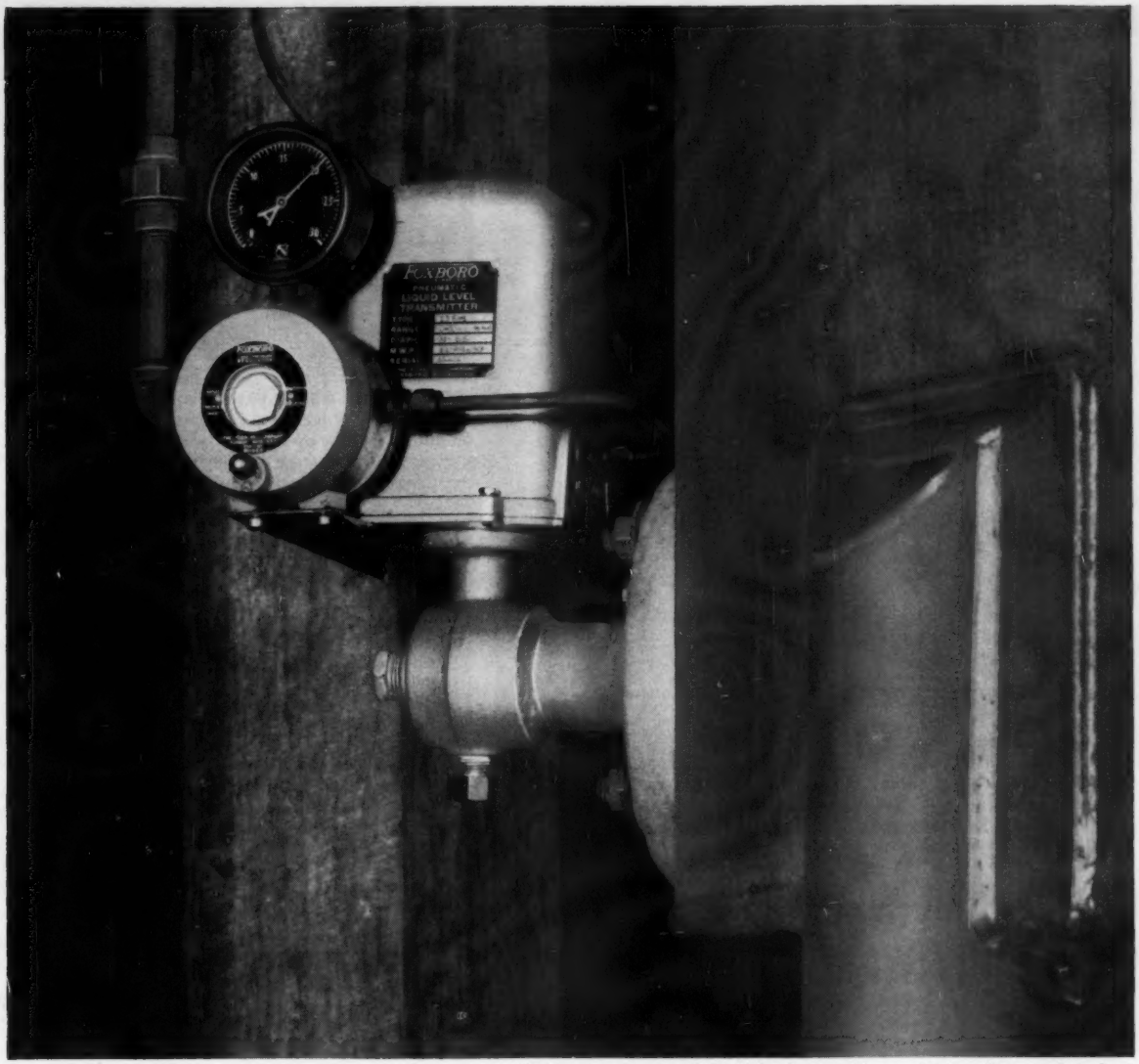

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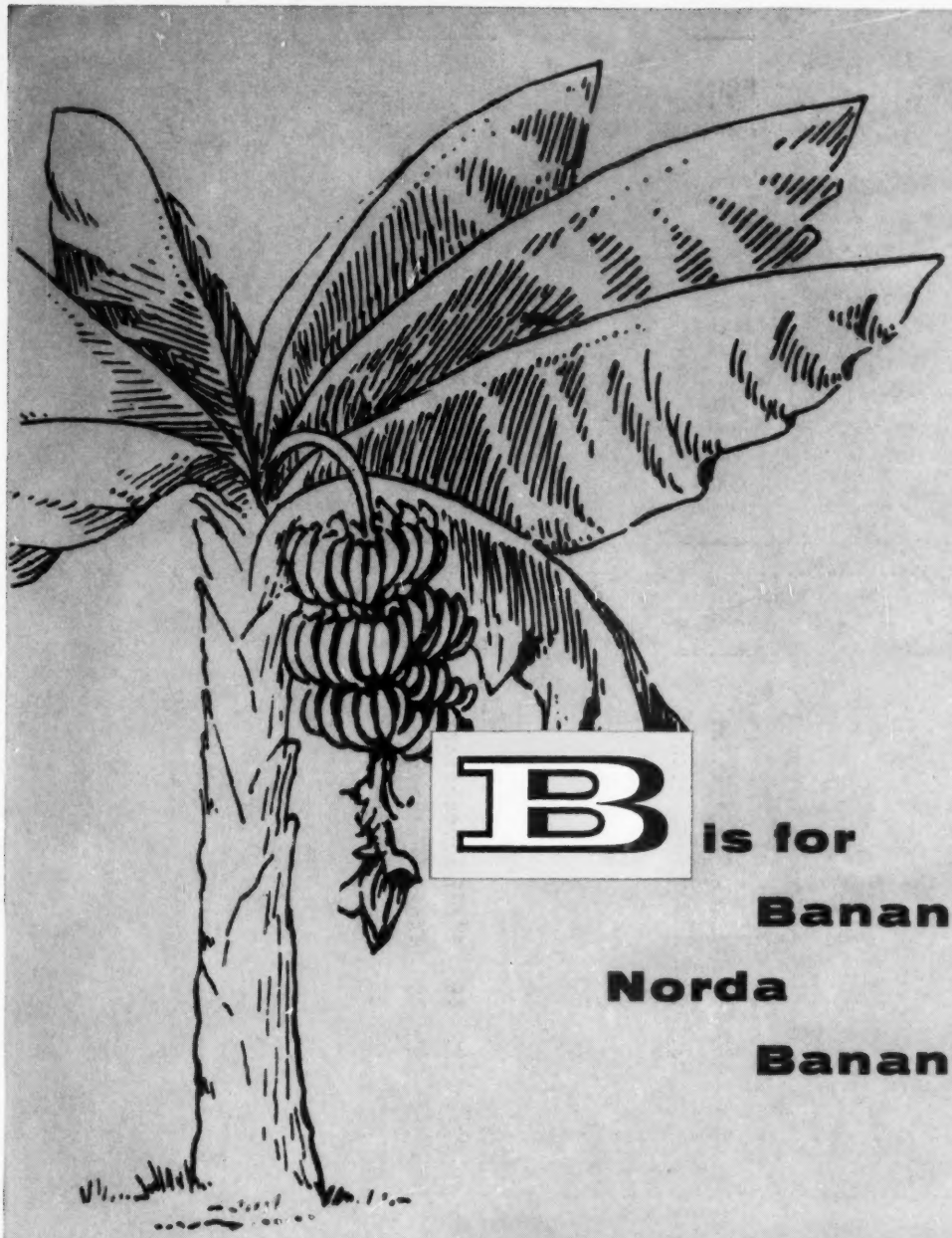

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